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THE

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OF THE

AMERICAN

MEDICAL ASSOCIATION.

INSTITUTED 1847.

VOL. XXV.

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By a Resolution passed at the session of 1851, the Committee of Publication were instructed to print conspicuously, at the beginning of the volume of the *Transactions*, the following disclaimer:—

"The American Medical Association, although formally accepting and publishing the Reports of the various Standing Committees, holds itself wholly irresponsible for the opinions, theories, or criticisms therein contained, except when otherwise decided by special resolution."

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MINUTES

OF THE

TWENTY-FIFTH ANNUAL MEETING

OF THE

AMERICAN MEDICAL ASSOCIATION,

Held in the City of Detroit, Michigan, June 2d, 3d, 4th, and 5th, 1874.

THE Association assembled at Hough's Detroit Theatre, on Tuesday, June 2d, at 11 A.M., and was called to order by the President, Dr. J. M. TONER, of District of Columbia.

The session was opened with prayer by the Rt. Rev. SAMUEL A. McCOSKRY, D.D., etc., Bishop of Michigan.

The Vice-Presidents, WM. Y. GADBERRY, M.D., of Mississippi, J. M. KELLER, M.D., of Kentucky, N. C. HUSTED, M.D., of New York, and L. F. WARNER, M.D., of Massachusetts, the Permanent Secretary, WILLIAM B. ATKINSON, M.D., of Pennsylvania, and the Assistant Secretary, THEODORE A. McGRAW, M.D., of Michigan, were also present.

Dr. WILLIAM BRODIE, of Michigan, Chairman of the Committee of Arrangements, addressed the delegates as follows:—

Mr. President and Gentlemen of the American Medical Association:

It is my pleasing duty, in behalf of the Medical Profession of the City of Detroit, of the State of Michigan, and of her citizens, to bid you a hearty welcome. Eighteen years have passed since this city was honored by your deliberations. As I look around me I note the absence of such men as IVES and HOOKER, of Connecticut; CHILDS, of Massachusetts; BLATCHFORD, WATSON, and BRINSMADE, of New York; MUSSEY and TILDEN, of Ohio; L. A. SMITH, of New Jersey; FROST, of South Carolina; WROTH, of Maryland; BRAINARD, of Illinois; McGUGIN, of Iowa; DOUSMAN, of Wisconsin;

DEWSON, of Ontario; TRIPLER, United States Army; and last, though not least, PITCHER, of Michigan—men then high in the counsels of this Association—absent by death. We are forcibly reminded that many of us must follow them ere you meet here again, and yet the American Medical Association will go on increasing in numbers and usefulness as is shown here to-day.

Detroit, then a city of 40,000 inhabitants, now enumerates over 100,000. Her suburbs, then woods and swamps, now resound with the busy hum of the machine, and the axe has yielded to the spade and plow. Brought into existence by the early explorers of our country, and made venerable by the march of time, she possesses the vigor of early manhood, is not behind her more aged sisters of the East, nor cast in the shade by the younger ones of the West.

Owned by herself, her merchants do their business in their own stores, and the mechanic and laborer dwell in their own homes. Jealous of any extravagance by her rulers, she is liberal in all that pertains to her growth, welfare, and culture. With all her improvements, her annual tax levy remains below a million of dollars, and her net bonded debt, exclusive of the debt of the Water Board on the first of February, 1874, was only $858,365.

The value of the real and personal property subject to assessment in 1856, as taken from the assessment rolls, was $13,757,583, full cash valuation: in 1874, $27,091,645, or three-tenths of full valuation. The actual cash valuation of the property of the city, real and personal, was $222,383 in 1856, now it is $3,043,082. From this brief survey you can form some idea of the growth and value of our city.

We point you with pride to our magnificent City Hall erected since 1865 at a cost of $600,000, which is open for your inspection, and from whose dome not only the city but even Lake Erie is visible.

We boast of Detroit as one of the healthiest cities of the Union, its mortality being only two and one-half per cent. for the year 1873. This happy state of health is not only due to her location on the beautiful Detroit River, but to her complete system of sewerage, over ninety-two miles having been constructed since 1835, at a cost of $1,528,000. Her public school system—the establishment of which on a permanent basis, and of which our citizens are justly proud—was eminently due to the efforts of the late Dr. PITCHER, who was your presiding officer at the meeting in this city in 1856. This system embraces twenty-eight school buildings, at a valuation of $548,000, in which over 12,000 scholars were

enrolled for 1873, and educated at an actual cost, inclusive of all expenses, of $10.50 per pupil per annum. Her public library deserves mention as one of her most popular institutions, established by the Constitution of the State, managed by the Board of Education, and supported by court fines and penalties. Its total receipts are $74,000; its expenditures, $52,000, and its total number of volumes 22,935. Detroit is abundantly supplied with water from the Detroit River. Of its purity, Prof. Duffield says: "It is impossible to find river water more free from organic impurities." The daily average supply for 1873 was 8,760,000 gallons, being about ninety gallons, or three barrels, per diem for each inhabitant, at a cost of only $1.74 per annum. The large surplus of water not directly used by the individual, serves to wash the sewers, and adds another reason for the purity of the city and health of her citizens.

Her Police and Fire Departments are unique in their discipline, arrangements, and management; while the former protects the person, the latter protects his property from the scourge of fire, and is valued at near $300,000. The Detroit Fire Department is in possession of the third self-propelling engine manufactured and in use in the United States, and whose performance will be presented for your observation. Her House of Correction cannot be omitted, it will be open to your inspection as a model of its kind, and I believe it is the second in this country that is self-supporting. While punishing crime it reforms the criminal and returns him to society improved in morals and in health.

The humanity of our citizens has kept pace with the growth of our city. Hospitals for the sick and afflicted (one of which is on the cottage plan), orphan asylums, homes for the friendless, and, as a sequence, a flourishing medical college, practically applying for the purpose of clinical instruction and medical education the material furnished by these institutions.

Allow me, gentlemen, to congratulate you on the *ésprit du corps* that brings so many of you from your homes and comforts, from the Pacific to the Atlantic coasts, from the Gulf of Mexico to the snowy regions of the north, the whole of the United States, and the Dominion of Canada by invitation.

Brothers, acting together to consult and devise for the general good of our race, laying aside all regards for self; the imposing spectacle is before the world—*the unselfishness of the medical profession.*

The Committee of Arrangements trust that in this meeting the

Association will make an "onward march" to its ultimate design and perpetuity.

When you are through the labors of the day you will be refreshed in the evening by the hospitality of our citizens. Most heartily we bid you welcome to the City of the Straits.

Dr. BRODIE then announced the following programme for the session:—

Meet each morning at 9, adjourn at 12.30 P. M. Sections meet at 3½ P. M. in the rooms appropriated to them.

Entertainments.—On Tuesday evening, the delegates are invited to receptions by Mayor MOFFATT and lady, 750 Jefferson Avenue, Mrs. PITTS, 710 Jefferson Avenue, and Dr. and Mrs. STEWART, 440 Jefferson Avenue.

Wednesday afternoon, a steamboat excursion will be given to Lake Erie and Lake St. Clair; in the evening receptions by Gov. BAGLEY and lady, 10 Washington Avenue, Mrs. DAVID THOMPSON, 51 Fort St. West, and Hon. PHILO PARSONS and lady, corner of Charlotte St. and Woodward Avenue.

Thursday afternoon, the delegates are invited by the Board of Inspection of the Detroit House of Correction to visit that institution at 4½. Evening, receptions by Hon. E. A. BRUSH and lady, 194 Randolph Street, Hon. JAMES F. JOY and lady, 140 Fort St. West, and Dr. and Mrs. BRODIE, 64 Lafayette Avenue.

An exhibition of the Fire Department will also be given on Tuesday afternoon at 5 o'clock.

Each morning the delegates will be presented with an Order of Business for the day, indicating the papers to be read, and the hour allotted to each.

He then presented the following list of registered delegates and permanent members:—

ALABAMA.

Mobile Medical Society,	JEROME COCHRAN.

CALIFORNIA.

State Medical Society,	G. L. SIMMONS.

COLORADO.

Territorial Medical Society,	HENRY T. BYFORD.
Rocky Mountain Medical Society of New Mexico and Southern Colorado,	MICHAEL BESHOAR.

CONNECTICUT.

State Medical Society,	J. B. KENT, ALVAN TALCOTT.
Middlesex Co. Medical Society,	ELISHA B. NYE.
New Haven County Medical Society,	B. H. CATLIN, JOEL CANFIELD.

DELAWARE.

State Medical Society,	HENRY F. ASKEW, ROBERT R. PORTER.

DISTRICT OF COLUMBIA.

Medical Association of D. C.,	JOHNSON ELIOT, FLODOARDO HOWARD, ROBERT REYBURN, JOSEPH M. TONER.
Med. Dept. Georgetown College,	JAMES E. MORGAN.
Children's Hospital of D. C.,	SAMUEL C. BUSEY.
Med. Dept. Columbian University,	WILLIAM LEE.

GEORGIA.

State Medical Society,	W. F. WESTMORELAND.

ILLINOIS.

State Medical Society,	T. DAVIS FITCH, EDWIN GAYLORD, GEO. W. HEWITT, W. W. MCMANN, O. W. MOORE, WM. P. PIERCE, SAMUEL C. PLUMMER, E. R. TRAVERS.
District Soc. of Central Illinois,	ROLLIN E. BEACH.
Fox River Valley Med. Assoc.,	DANIEL S. JENKS.
Military Tract Medical Assoc.,	E. L. PHILLIPS.
Chicago Medical College,	W. H. BYFORD.
Cook County Hospital,	H. A. JOHNSON.
Surgico-Medico-Pathological Society of La Salle and adjoining Counties,	GEO. J. MONROE.

McLean County Medical Society,	E. W. GRAY.
Peoria City Medical Association,	ROBERT ROSKOTEN.
Quincy Medico-Pathological Soc.,	HENRY W. KENDALL.
Rush Medical College,	MOSES GUNN.
Southern District, Hancock County Medical Society,	W. S. LINN.
Permanent Members,	N. S. DAVIS, JOHN L. POLK, M. W. WALTON.

INDIANA.

State Medical Society,	H. P. AYRES, WM. H. BELL, GEO. W. BURTON, HAYMOND W. CLARK, S. P. COLLINGS, JAS. S. GREGG, J. H. HELM, JOHN M. KITCHEN, W. K. MAVITY, W. H. MYERS, JOEL PENNINGTON, M. SEXTON, THADDEUS M. STEVENS, R. N. TODD, W. W. VINNEDGE.
Æsculapian Society of Wabash Valley,	L. J. WILLIEN.
Allen County Medical Society,	JOSEPH R. BECK, JOHN D. HARTLEY.
Dearborn County Medical Society,	GEORGE SUTTON.
De Kalb County Medical Society,	JOHN A. COWAN.
Drake Academy of Medicine,	C. P. BACON.
Elkhart County Medical Society,	J. W. ALLEN, R. J. HAGGERTY, J. A. WORK.
Fort Wayne Medical Association,	ISAAC M. ROSENTHAL.
Grant County Medical Society,	WM. LOMAX.
Indianapolis Acad. of Medicine,	R. D. CRAIGHEAD.
Mitchell District Medical Society,	ALFRED F. BERRY.

North-Eastern Indiana Medical Society,	E. W. KUEPPER, THEODORE MCNABB, JARED SPOONER, H. D. WOOD.
Terra Haute Medical Society,	EZRA READ.
Wabash County Medical Society,	J. M. RUNYAN, A. J. SMITH.
Whilley County Medical Society,	D. G. LINVILL.
Permanent Members,	J. F. MCCARTHY, THEOPHILUS PARVIN.

IOWA.

State Medical Society,	DAVID S. FAIRCHILD, M. V. B. HOWELL, A. A. NOYES.
Cedar Valley Medical Association,	D. W. CROUSE.
Clinton County Medical Society,	A. J. HOBART, A. B. IRELAND.
Keokuk College of Physicians and Surgeons,	H. T. CLEAVER, J. C. HUGHES.
Des Moines Valley Med. Assoc.,	J. C. HINSEY.
Permanent Members,	J. W. COWDEN, P. J. FARNSWORTH, A. C. ROBERTS.

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State Medical Society,	C. V. MOTTRAM.

KENTUCKY.

State Medical Society,	M. S. BROWNE, D. D. CARTER, R. H. GALE, THOS. J. GRIFFITHS, JOHN DAVIES JACKSON, JAMES M. KELLER, JOHN A. OCTERLONEY, HENRY M. SKILLMAN.
Central Kentucky Medical Assoc.,	SAML. L. S. SMITH.
Louisville College of Physicians and Surgeons,	EDW. VON DON HOFF, EDW. RICHARDSON.

Med. Dept. Univ. of Louisville,	J. M. Bodine.
Shelby Co. Medical Association,	Frank Atkisson.
Permanent Member,	John Dillard.

MAINE.

Permanent Member,	Alonzo Garcelon.

MARYLAND.

Medical and Chirurgical Faculty,	Thomas B. Evans.
College of Physicians and Surgeons of Baltimore,	E. Lloyd Howard.
Med. and Surg. Soc. of Baltimore,	John Morris.

MASSACHUSETTS.

State Medical Society,	Geo. W. Grover, Horatio N. Page, L. F. Warner.
Bristol South Dist. Med. Soc.,	Geo. T. Hough.
Permanent Member,	J. W. D. Osgood.

MICHIGAN.

State Medical Society,	Henry B. Baker, Bolivar Barnum, Lyman W. Bliss, Wm. Brodie, Wm. Brownell, Nelson H. Claflin, B. H. Fairchild, George W. Green, J. S. Hamilton, Homer O. Hitchcock, W. J. Kelsey, Henry B. Landon, T. J. Langlois, James F. Noyes, Foster Pratt, Geo. E. Ranney, J. S. Rouse, Hamilton E. Smith, C. P. Southworth.

Northern Michigan Med. Soc.,	L. W. FASQUELLE.
State Medical Society,	J. R. THOMAS, JOHN B. WHITE, JAS. C. WILSON, L. C. WOODMAN.
Allegan County Medical Society,	LENORA FOSTER.
Berrien County Medical Society,	JOHN BELL.
Central Michigan Medical Association,	R. J. SHANK, A. A. THOMPSON.
Detroit Academy of Medicine,	JOHN M. MASON, E. L. SHURLY, PETER STEWART.
(Detroit) Michigan Retreat for the Insane,	J. G. JOHNSON.
(Detroit) Harper's Hospital,	A. S. HEATON.
(Detroit) Home of the Friendless and Children's Hospital,	WM. C. GUSTIN.
Detroit Medical College,	LEARTUS CONNER, C. B. GILBERT.
Detroit Orphan Asylum,	J. J. OAKLEY.
(Detroit) St. Luke's Hospital,	HENRY O. WALKER.
(Detroit) St. Vincent's Orphan Asylum,	ANDREW BORROWMAN.
Eaton Rapids Medical Society,	C. N. HAYDEN.
Flint Academy of Medicine,	T. R. BUCKHAM, ANDREW B. CHAPIN, A. F. COOPE.
Grand Rapids Medical and Surgical Society,	JOHN BRADY, ARTHUR HAZLEWOOD.
Jackson County Medical Society,	E. B. CHAPIN, JOHN D. NORTH.
Kalamazoo Medical Association,	MOSES PORTER.
Montcalm Medical Association,	O. E. HERRICK, JAS. MULHERN, CHAS. S. SHELDON.
North-Eastern District Med. Soc.,	S. L. ANDREWS, J. B. FARES, WM. GREENSHIELDS, JAMES HARVEY, M. C. KENNY.

Saginaw County Medical Society,	O. P. BARBER, BENJ. B. ROSS.
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University of Michigan,	SILAS H. DOUGLAS, G. E. FROTHINGHAM.
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North-Eastern Ohio Medical Association,	N. S. EVERHARD, O. N. LYMAN, SALMON HUDSON, L. S. MURRAY.
North-Western Ohio Medical Society,	C. E. BEARDSLEY, WM. J. BREWINGTON, E. B. HARRISON, A. HURD, PHILO E. JONES, A. N. KROUT, J. M. SHOEMAKER.
Toledo Medical Association,	GEO. W. BOWERS, W. M. DOUGLASS, H. M. SCHNETZLER, J. T. WOODS.
Williams County Medical Society,	J. W. LONG, J. C. MORTLAND.
Permanent Members,	S. A. CONKLIN, H. J. DONAHOE, A. J. ERWIN, R. S. GILCRIST, JAS. P. HENDERSON, O. M. LANGDON, B. B. LEONARD, A. N. READ, ELLWOOD STANLEY, J. H. TOWNSEND.

PENNSYLVANIA.

State Medical Society,	FREDERICK J. BUCK, JOHN C. COTTON, FRANK COWAN, RICHARD J. DUNGLISON, J. W. HUGHES, JOSEPH SWARTZ.
Allegheny County Medical Society,	W. J. ASDALE, SILAS N. BENHAM, J. H. GRONARD, JAMES KING, WM. F. KNOX,

Allegheny County Medical Society,	JAMES MCCANN, A. M. POLLOCK, J. H. SNODGRASS, J. D. THOMAS, T. R. VANKIRK.
Beaver County Medical Society,	WM. J. LANGFITT.
Blair County Medical Society,	G. E. BREHMAN, WM. M. FINDLEY, SIDNEY THOMPSON.
Bradford County Medical Society,	EZRA P. ALLEN, GUSTAVUS CONKLIN.
Crawford County Medical Society,	DAVID BEST, THEODORE J. YOUNG.
Cumberland County Medical Society,	ALFRED DAY, A. J. HERMAN.
Fayette County Medical Society,	SMITH BUTTERMORE, WM. S. DUNCAN.
Huntingdon Co. Medical Society,	D. P. MILLER.
Lycoming County Medical Society,	E. M. ALBA, THOS. H. HELSBY, THOMAS LYON.
Mercer County Medical Society,	E. X. GEIBNER, J. B. LIVINGSTONE, BERIAH E. MOSSMAN.
Philadelphia Co. Medical Society,	WASHINGTON L. ATLEE, ISAAC S. ESHLEMAN, SAMUEL D. GROSS, BENJAMIN LEE, WM. M. L. RICKARDS, WM. TERRY TAYLOR.
Philadelphia Coll. of Physicians,	RICHARD A. CLEEMANN.
Northern Med. Assoc. of Phila.,	NATHAN L. HATFIELD.
Venango County Medical Society,	BUCKLAND GILLETT.
Williamsport City Medical Soc.,	J. S. CRAWFORD.
Washington County Medical Society,	S. L. BLACHLY, GEORGE A. LINN.
Permanent Member,	WM. B. ATKINSON.

RHODE ISLAND.

State Medical Society,	OTIS BULLOCK, GEORGE CAPRON JOB KENYON.

SOUTH CAROLINA.

Permanent Member,	A. N. TALLEY.

TENNESSEE.

State Medical Society,	J. H. VAN DEMAN.
University of Nashville, Medical Department,	W. K. BOWLING.
Vanderbilt Univ., Med. Dept.,	W. T. BRIGGS.

TEXAS.

State Medical Society,	RICHARD W. ALLEN, THOS. J. HEARD, JAMES W. MCLAUGHLIN, J. M. MORRISON, M. A. TAYLOR.
Dallas City Medical Society,	E. T. EASLEY.
Waco Medical Association,	H. W. BROWN.

WEST VIRGINIA.

State Medical Society,	ROBERT W. HAZLETT, JOHN COX HUPP.
Medical Soc. of City of Wheeling and County of Ohio,	JAMES CUMMINS, JOHN FRISSELL.

WISCONSIN.

State Medical Society,	JOHN K. BARTLETT, D. M. BOND, H. L. BUTTERFIELD, D. LA COUNT, CHRISTIAN LINDE, E. L. GRIFFIN, JOHN G. MEACHEM, THOMAS P. RUSSELL, JR., J. B. WHITING, M. WATERHOUSE.
Iowa County Medical Society,	H. VAN DUSEN.

UNITED STATES ARMY.

Medical Department, { JOHN SHAW BILLINGS, JOHN MOORE, JOSEPH R. SMITH, J. J. WOODWARD.

UNITED STATES NAVY.

Medical Department, { A. A. HENDERSON, ROBERT T. MACCOUN, EDWARD SHIPPEN.

On motion, the action of the Committee was approved, and the list as read was confirmed.

The following, on motion of the Committee of Arrangements, were elected members by invitation:—

Dr. R. CARNEY, of Windsor, Ontario; Prof. J. H. RICHARDSON, of Toronto, Ontario; CHARLES E. CASGRAIN, of Windsor, Ontario; C. B. HALL, of Toronto, Ontario; WALTER LAMBERT, of Windsor, Ontario; ALFRED A. ANDREWS, of Windsor, Ontario; E. NESBITT, of Sandwich, Ontario; GEORGE M. MCMICKING, of Goderich, Ontario; F. B. MCCORMICK, of Ripon, Ontario; F. F. BELL, of Amherstbergh, Ontario.

On behalf of the Canadian physicians thus elected, Prof. RICHARDSON, of Toronto, thanked the Association for the honor conferred.

Vice-President W. Y. GADBERRY, M.D., having taken the chair, the President then read the annual address.

On motion of Dr. THEOPHILUS PARVIN, of Indiana, the recommendations contained in the address were referred to a Committee consisting of Drs. J. P. WHITE, of New York; J. D. JACKSON, of Kentucky; J. K. BARTLETT, of Wisconsin; EDWARD SHIPPEN, of United States Navy; W. F. WESTMORELAND, of Georgia.

Reports having been called for, the chairmen of the several Sections reported themselves ready to deliver their addresses as demanded by the By-Laws.

On motion, the Committee of Arrangements were requested to designate the hours for the reading of these addresses.

The Committee—

On Cultivation of the Cinchona Tree, Dr. L. J. DEAL, of Pennsyl-

vania, Chairman, reported, and on motion the report was referred to the Section on Practice of Medicine, etc.

On the Treatment of Fractures, Dr LEWIS A SAYRE, of New York, Chairman, reported; referred to Section on Surgery and Anatomy.

On Gynæcology, Dr. M. A. PALLEN, of Missouri, Chairman, reported; referred to Section on Obstetrics, etc

On some Diseases Peculiar to Colorado, Dr. JOHN ELSNER, of Colorado, Chairman, reported progress.

On Rank of Medical Corps of the Army, Dr. J. M. KELLER, of Kentucky, Chairman, reported; on motion, the Committee of Arrangements were requested to designate a time for the reading of the report.

On the Progress of Otology, Dr. D. B. ST. JOHN ROOSA, of New York, Chairman, no report.

On American as compared with Foreign Winter Cures, Dr. H. R. STORER, of Massachusetts, Chairman, no report.

On Railroad Injuries, Dr. W. F. PECK, of Iowa, Chairman, requested to be continued, which was granted.

On the Therapeutics of Ammonia, Dr. P. J. FARNSWORTH, of Iowa, Chairman, reported; referred to Section on Practice of Medicine.

On the Relation of Physiology to the Practice of Medicine, Dr. E. W. GRAY, of Illinois, Chairman, reported; similarly referred.

On Puerperal Fever, Dr. W. O. SMITH, of Kentucky, Chairman, no report.

On the Legal Relations of Moral Insanity, Dr. E. LLOYD HOWARD, of Maryland, Chairman, reported; referred to Section on Medical Jurisprudence, etc.

Dr. J. C. HUPP, of West Virginia, offered a report on Indigenous Botany of West Virginia, which was referred to the Section n Practice of Medicine, etc.

Dr. J. P. GARRISH, of New York, offered a paper on Ergot, similarly referred.

Dr. G. M. BEARD, of New York, offered a paper on Electricity, which was referred to Section on Surgery and Anatomy.

Dr. R. A. VANCE, of New York, offered a paper on Scrivener's Palsy, similarly referred.

Dr. L. D. BULKLEY, of New York, a paper on the Management of Eczema, Pruritus, etc., which was referred to the Section on Practice of Medicine, etc.

Dr. J. G. MEACHEM, of Wisconsin, a paper on the Encephalic

Circulation, and Dr. T. R. BUCKHAM, of Michigan, on Uræmia, both of which were referred to the same Section.

On motion of Dr. J. M. KELLER, of Kentucky, it was agreed that the several States should select their members of the Committee on Nominations early on Wednesday morning, that the list might be announced by the Secretary at the opening of the session.

On motion, the Association adjourned to meet on Wednesday at 9 A. M.

SECOND DAY.

WEDNESDAY, JUNE 3.

The Association assembled in the Opera House, the Detroit Theatre having been found too contracted, and was called to order by the President, at 9 A. M.

Dr. BRODIE read the printed programme for the day.

The Permanent Secretary read the following as the Committee on Nominations:—

Alabama, JEROME COCHRAN; California, GUSTAVUS L. SIMMONS; Colorado, H. T. BYFORD; Connecticut, B. H CATLIN; Delaware, R. R. PORTER; District of Columbia, JOHNSON ELIOT; Georgia, W. F. WESTMORELAND; Illinois, W. H. BYFORD; Indiana, R. N. TODD; Iowa, J. C. ROBERTS; Kansas, C. V. MOTTRAM; Kentucky, E. RICHARDSON; Maine, ALONZO GARCELON; Massachusetts, L. F. WARNER; Maryland, E. LLOYD HOWARD; Michigan, FOSTER PRATT; Minnesota, E C. CROSS; Mississippi, A. G. SMYTHE; Missouri, W. S. EDGAR; Nebraska, M. T. ANDERSON; New Hampshire, J. F. CARR; New Jersey, CHAS. F. DESHLER; New York, J. MARION SIMS; Ohio, E. H. HYATT; Pennsylvania, BENJAMIN LEE Rhode Island, JOB KENYON; South Carolina, A. N. TALLEY; Tennessee, WM. T. BRIGGS; Texas, H. W. BROWNE; West Virginia, JOHN C. HUPP; Wisconsin, J. B. WHITING; United States Army, JOS. R. SMITH; United States Navy, EDWARD SHIPPEN.

On behalf of the Committee of Arrangements, Dr. BRODIE offered the names of Dr. F. M. WILDER, of Chicago, Illinois, and M. S. BROWNE, Maysville, Kentucky, as Permanent Members, and Drs. C. E. SLOCUM, Defiance, Ohio; LOUIS HUMPHREYS, South Bend, Indiana; J. C. SLOCUM, Shelbyville, Indiana; L. V. MOE, Ottawa, Ontario; WILLIAM SCOTT, Woodstock, Ontario; T. F. MCLEAN, Kingston, Ontario; CHARLES E. MOORE, London, Ontario; and WM. CANIFF, Toronto, Ontario, as members by invitation.

On motion, they were unanimously elected.

Dr. R. R. PORTER, of Delaware, offered the following, which on motion of Dr. S. S. RIDDELL, of New York, was referred to the Judicial Council:—

Whereas, The American Medical Association has entered its twenty-fifth year of existence, during which the active members have labored zealously to elevate the science of medicine by recording and reporting individual experiences, publishing valuable papers and essays, and by their efforts to bring under one rule all its members, set forth in our system of ethics, which wise code, based on honor, right, and justice, is now acknowledged by thirty States, facts that show the great good accomplished and proclaim the American Medical Association an institution of which its members may behold and rejoice and be proud.

Whereas, During our fraternal strife, when the manifestations of medical brotherhood were suspended for a short period, the activities thereof were unextinguished, nay, unextinguishable, a fact declarative that the National Medical heart was more liberal, true to right and faithful to principles that have ever moved it; for its controlling power allowed an interruption of only two annual meetings, when its biddings declared that united friendship and cordial greeting should be resumed, forming one of the brightest pages of the American Medical Association; therefore,

Resolved, That in the recommendation and appointment of committees, preference should be given to delegates present to those in non-attendance.

On motion of Dr. W. W. JONES, of Ohio, the following was adopted:—

Resolved, That the members of this Association learn with regret of the severe illness of Prof. E. W. JENKS, a member of the Executive Committee, and of this city, and that we tender him our sympathy in his affliction, and best wishes for his speedy recovery.

Dr. N. S. DAVIS, of Illinois, chairman of the Judicial Council, then read the following report:—

The undersigned Committee, to whom was referred the question of a general revision of the Code of Ethics of the American Medical Association, respectfully report as follows:—

Soon after the adjournment of the annual meeting in May, 1873, the chairman of your Committee, being desirous of ascertaining how far there existed a desire in the minds of the profession to have the Code changed, addressed letters of inquiry to thirty or

forty men in different parts of the country who might be supposed to represent the general sentiment of the profession in their respective districts, from twenty-five of whom answers were received. Fourteen expressed an entire approval of the Code as it is, and thought it better to attempt no changes. Six were opposed to any general revision, but supported slight changes in some sections, while only five expressed such dissatisfaction as to indicate a desire for thorough revision.

If these correspondents might be regarded as fairly representing the profession, any important changes in the Code would be in direct opposition to the wishes of a large majority of those for whose guidance it was framed. Those who have expressed a desire for changes in the present Code are readily divided into two classes. The first class appear to look upon a Code of Ethics in the same light as ordinary by-laws, and consequently regard all in the present Code relating to the duties of patients to their physicians, of the public to the profession, and of the profession to the public as superfluous and useless. They would retain nothing except the rules governing the intercourse of physicians with each other, and a very few of this class object to any *written* rules, claiming that the unwritten sense of *honor* belonging to members of an educated profession is sufficient to afford all needed guidance and control. It seems to us that the objections of this whole class are founded on a narrow and imperfect conception of the real nature and objects of an ethical code. The latter, instead of consisting of a set of rules or by-laws, simply defining the duties and privileges of members of some organized society, should be a concise and full exposition of the relations sustained by a profession to the rest of the community, the mutual obligations imposed by such relations, and the rules governing members in their intercourse with each other. Hence, a Code of Ethics for our profession must partake more or less of the nature of a moral essay, developing principles for guidance equally applicable to all places and times, instead of a few simple rules applicable to the members of some particular society. It was with this view that Dr. Percival wrote his celebrated essay in the latter part of the last century, and which has been regarded as a standard authority in Europe from that time to the present. The same idea evidently controlled the very able Committee appointed by the preliminary Convention in 1846 to report a Code of Ethics for the profession of this country, and who gave us the admirably concise and well-arranged

summary of the principles involved by Percival, which constitutes our present Code.

To strike out, as some have proposed to do, all relating to the patients, the community, and the public toward the profession, would be to destroy the completeness of the work, and obscure the meaning of what was retained. For the members of any given profession cannot rightly appreciate the relations they sustain to each other, without considering at the same time their mutual relations and duties to the community in which they live. After a very careful examination we are satisfied that our present Code of Ethics presents the true ethical relations and duties of the profession in a form as concise, as well arranged, and as complete as it is possible to express them. The principles and rules of conduct enumerated are clearly stated, and are equally applicable for the guidance of all who attempt to practise the healing art, whether they are members of any medical organization or not.

The second class, whose members desire alterations in the present Code of Ethics, do not object to its general scope, but ask for amendments or additions to particular sections only. With only a few and unimportant exceptions, these propositions all relate to two subjects, namely, *specialties* and bestowing professional services by *contract*. Concerning the first of these there seems to be much false reasoning and needless irritation. If *specialists*, or those who limit their practice to some one class of diseases or accidents, are members of the profession, it follows logically that they must be governed in all respects by the same ethical principles as the general practitioners; for no enlightened body of men can consistently have one code of morals for one part of its members, and another code for the rest. Whatever may be regarded as derogatory to the dignity and welfare of the general practitioner must be equally so to the specialist, so long as he is recognized as a member of the profession. If the one may not issue cards, hand-bills, etc., calling the attention of those laboring under particular diseases to themselves, neither can the other without violating the principles of both justice and equity.

The Code of Ethics very properly makes no mention of specialties or specialists, but presents plainly the rules necessary for the maintenance of professional character as applicable to all. But we are asked how, then, can those who wish to pursue a special practice make known their position to their brethren and the public? We answer that the title of Doctor of Medicine covers the whole

field of practice, and whoever is entitled to that appellation has the right to occupy the *whole* or any part of the field, as he pleases. The acceptance of this honorable title is presumptive evidence to the community that the man accepting it is ready to attend practically to any and all duties which it implies. As all special practice is simply a self-imposed limitation of the duties implied in the general title of doctor, it should be indicated, not by special or qualifying titles, such as *oculist*, *gynæcologist*, etc., nor by any positive setting forth of special qualifications, but by a simple honest notice appended to the ordinary card of the general practitioner, saying, "Practice limited to diseases of the eye and ear," or "to diseases peculiar to women," or "to midwifery exclusively," as the case may be. Such a simple notice of limitation, if truthfully made, would involve no other principle than the notice of the general practitioner that he limits his attention to professional business within certain hours of the day. Neither could it be regarded as a claim to special or superior qualifications. To give the specialist any privileges beyond this, would be to invest him with a special advantage inconsistent with the equality of rights and duties pertaining to the profession. We see no reason therefore for recommending any change in the present Code of Ethics in reference to this subject.

The remaining topic, concerning the bestowal of professional services under specific *contracts* specifying the amount of pecuniary compensation, is of sufficient importance to require careful attention.

The present Code of Ethics, while sanctioning a most liberal bestowal of gratuitous professional service to the poor, whether as individuals or in public charitable institutions, and in aid of the sanitary interests of communities, yet expressly prohibits the bestowal of such services on well-to-do individuals, endowed, mutual benefit, or any kind of money making institutions, societies, or corporations. It also expressly prohibits all attempts to attract attention and make merchandise of charity, by ostentatiously parading before the public, notices proffering service and medicine to the "poor gratis." We see no reason why this is not sufficient so far as relates to the regulation of gratuitous services. To govern the matter of compensation the Code simply gives us the following general declaration: "Some general rules should be adopted by the *faculty*, in every town or district, relative to *pecuniary acknowledgments* from their patients; and it should be deemed a point of honor to adhere to these rules with as much uniformity as varying

circumstances will admit." The aim appears to have been to allow sufficient variations in the rate of compensation to accommodate the varying habits and circumstances of different communities, and yet to bind each individual to an honorable compliance with the general rules established by his professional brethren. Such being the correct ethical principle, the difficulty consists in tracing and maintaining clearly its practical application. That the principle laid down in the paragraph just quoted, is inconsistent with all contracts or agreements to attend individuals, families, companies, corporations, or any associations or institutions other than those of a strictly charitable character, for a specified sum per month or year, without regard to the amount of medical services that might be required in the time specified, no one can reasonably doubt. It seems to us equally inconsistent with the ethical rule, to enter into a contract with a manufacturing company to attend their employés, or with a school to attend its patrons or scholars, for a fixed sum per annum, to be derived from the levy of a certain percentage on the wages of the employés or on the tuition fees of the students; for however plausible may be the humanitarian idea of securing for the employé and the student adequate medical attendance when sick at the smallest average cost, the practical working of the system violates both the rule that compensation for medical services should be in accordance with the kind and amount of services rendered, and that every individual and family should be free to choose their own medical attendant without dictation or indirect restraint.

These observations do not apply to a certain kind of contract service sometimes required in connection with the medical staffs of the army and navy, nor to the hospital tax on sailors in the marine hospital system, for reasons too obvious to require mention. One other subject requires a few moments' attention. There is a class of public charitable institutions, such as county almshouses, orphan asylums, etc., supported by public taxation. In many of the States the public authorities having control of such institutions have annually asked for bids from the profession, offering to award the contract for professional services to the one who should bid for the lowest pecuniary consideration.

While as charitable institutions, any member of the profession might offer his services to such of the poor inmates as might ask for them gratuitously, yet the idea of asking members of the profession to bid against each other for the pay for public professional

services, is repugnant to every feeling of professional honor, and often productive of great injustice to the sick poor.

The public authorities, in all such cases should fix such just rate of compensation for the necessary medical services as they may deem best, and then appoint the best medical man who is willing to accept the compensation proposed. And, we have no doubt, but that a proper attention to this subject on the part of the profession would secure the necessary change.

It is, however, very desirable to so manage all our pecuniary relations with the public, and especially with municipal and legislative authorities, that we avoid creating the impressions on the public mind that the profession and its social organizations are little better than mere trades-unions, having for their chief object mutual pecuniary protection. After carefully reviewing the whole subject your Committee do not recommend any alteration in the present Code of Ethics. On the contrary, we desire to express the opinion that if every medical school and society would supply each graduate as he left the school, and each member initiated into the society, with a printed copy of the Code, accompanied with the injunction that it be carefully studied, it would be productive of much good, directly to the profession and indirectly to the community.

On motion of Dr. J. H. VAN DEMAN, of Tennessee, the report was unanimously adopted.

The amendments to the Plan of Organization offered at the last session were next taken up.

Offered by Dr. N. S. DAVIS, of Illinois:—

Strike out the second paragraph of Art. II. and insert the following:—

"The delegates shall receive their appointment from permanently organized State medical societies, and such county and district medical societies as are recognized by representation in their respective State societies, and from the Medical Department of the Army and Navy of the United States."

Also, strike out the fourth paragraph of same Article, and insert:—

"Each State, county, and district medical society, entitled to representation, shall have the privilege of sending to the Association one delegate for every ten of its regular resident members, and one for every additional fraction of more than half that number.

"The Medical Staffs of the Army and Navy shall be entitled to four delegates each."

After some discussion, on motion of Dr. S. C. BUSEY, of District of Columbia, the following proviso was added to the amendment:—

Provided, however, that the number of delegates from any particular State, Territory, county, city, or town shall not exceed the ratio of one in ten of the resident physicians who may have signed the Code of Ethics of this Association.

The amendment, with the proviso, was then adopted by a large majority.

By request, action on the other amendments was temporarily postponed to hear the report on the Memorial to Congress.

Vice-President Dr. N. C. HUSTED in the chair.

Dr. JAS. M. KELLER, of Kentucky, chairman of the Committee on Rank of the Medical Staff of the Army, read the following report:—

Your Committee have the honor to report that immediately after the adjournment of the St. Louis meeting they took steps to ascertain the status of the medical staff of the army under existing laws, and conferred with a number of the medical officers as to the best method of securing for them that equality with the other staff corps in the matter of rank which it is undoubtedly just and right that they should enjoy.

Your Committee then drew up a memorial to Congress setting forth the facts of the case, and presenting the draft of a bill which, if it should become a law, would afford the relief asked by the medical corps without injury to any other branch of the public service. This memorial was printed, and copies forwarded to each member of the American Medical Association and to the various State and county medical societies, with a letter requesting their co-operation.

In response to this appeal the several local societies have passed resolutions indorsing the action of the American Medical Association and of your Committee, and asking favorable legislation by Congress. These resolutions have been forwarded to the respective Senators and Representatives.

Shortly after the commencement of the present session of Congress your Committee waited upon the military committees of the Senate and House of Representatives, presented the memorial, and urged the adoption of the bill by which it was accompanied. The bill was accordingly introduced into the House of Representatives January 6, 1874, read twice and referred to the Military Com-

mittee, by whom, we regret to say, no action has as yet been taken on it.

Notwithstanding this failure to secure prompt legislation by Congress in behalf of our brethren in the army, your Committee are of opinion that by continued exertion our object can probably be attained during the next session of that body. The present session has, as it happens, been an unfortunate one for urging the claims of the medical staff. In consequence of the financial panic of last fall the utmost economy in all administrative matters has been attempted, and at the time your Committee presented its memorial to Congress a very considerable reduction in the army had been proposed and was under consideration. So far as your Committee can judge, it is now very improbable that any such reduction will be made, but the fact that it has been under consideration was no doubt the chief reason why the bill introduced January 6th has not yet been acted upon. We, therefore, recommend the appointment of a new committee to memoralize Congress at its next session, and think it desirable that it should be composed of one member from each State, as provided in the following preamble and resolution, the adoption of which are respectfully recommended:—

Whereas, we have learned with regret that Congress has not as yet acted favorably on our memorial in behalf of the medical corps of the army; *and whereas*, it is, in our opinion, just and right that the rank of the medical officers of the army should be fully equal to that of the officers of the other staff corps, or of the medical corps of the navy, which we are informed is not the case under existing laws; therefore,

Resolved, That a committee of one from each State and Territory be appointed by the President for the purpose of memorializing Congress on this subject, and of securing the co-operation of the several State and county medical societies for the same purpose.

J. M. KELLER,
Chairman of Committee.
JOHN A. MURPHY, of Ohio,
N. S. DAVIS, of Illinois,
H. F. ASKEW, of Delaware,
J. M. TONER, of D. C.

Surgeon J. J. WOODWARD, of the army, on behalf of the medical department of the United States army, thanked the Committee for the report, and concurred with the views expressed in regard to the

effect of the panic upon the action. He explained the action of the present law upon the rank of army medical officers.

He then offered the following amendments to the resolutions. After the word "territory" insert the words "with power to fill vacancies," omit the words "by the President," and add the following:—

Resolved, That Dr. J. M. TONER, of the District of Columbia, be chairman of said committee, and that the other members of the committee be appointed by the President.

This amendment was unanimously adopted.

On motion, the report as amended was then unanimously adopted.

The President resumed the chair.

Committee on the Rank of the Medical Department of the Army.—J. S. WEATHERLY, of Alabama; HENRY GIBBONS, of California; CHAS. L. IVES, of Connecticut; HENRY F. ASKEW, of Delaware; W. F. WESTMORELAND, of Georgia; EDMUND ANDREWS, of Illinois; LUTHER D. WATERMAN, of Indiana; W. F. PECK, of Iowa; C. A. LOGAN, of Kansas; J. M. KELLER, of Kentucky; ALONZO GARCELON, of Maine; CHRISTOPHER JOHNSTON, of Maryland; PETER PINEO, of Massachusetts; WM. BRODIE, of Michigan; A. B. STUART, of Minnesota; W. Y. GADBERRY, of Mississippi; J. B. JOHNSON, of Missouri; JAS. BROWN, of New Hampshire; EZRA M. HUNT, of New Jersey; JOHN C. PETERS, of New York; W. A. B. NORCOM, of North Carolina; JOHN A. MURPHY, of Ohio; S. D. GROSS, of Pennsylvania; E. M. SNOW, of Rhode Island; A. N. TALLEY, of South Carolina; WM. T. BRIGGS, of Tennessee; H. W. BROWN, of Texas; HUNTER MCGUIRE, of Virginia; JOHN C. HUPP, of West Virginia; H. D. HOLTON, of Vermont; J. K. BARTLETT, of Wisconsin.

The other amendments to the Plan of Organization were then considered.

Offered by Dr. P. PINEO, of Massachusetts:—

Art. II., second paragraph, after "army and navy," insert "and the marine hospital service of the United States."

By-laws, sect. 6, after "the chiefs of the bureaus of the army and navy," insert "and the supervising surgeon of the United States marine hospital service."

On motion of Dr. N. S. DAVIS, this was laid on the table indefinitely.

Offered by Dr. E. L. HOWARD, of Maryland:—

Art. IV., strike out second clause of first paragraph, and insert:—

"They shall be nominated by the Judicial Council, and shall be elected by vote on a general ticket."

On motion of Dr. R. REYBURN, of D. C., this was laid on the table.

Offered by Dr. A. S. MAXWELL, of Iowa:—

"*Resolved*, That in view of the many and important duties imposed upon the Nominating Committee, the Medical Society of each State and Territory that elects delegates, be requested, when selecting delegates, to nominate one member of such delegation as their member of the nominating committee, and also designate the mode of filling vacancies."

On motion of J. M. KELLER, of Kentucky, this was laid on the table.

Offered by Dr. A. M. POLLOCK, of Pennsylvania:—

Art. VI., first paragraph, strike out the word "five" and insert "ten."

By-laws, Art. 5, first paragraph, strike out "five" and insert "ten,"

On motion of Dr. W. B. ATKINSON, this was laid on the table.

The following letter from the Surgeon-General's Office was read by the Permanent Secretary:—

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, D.C., April 11, 1874.

Dr. J. M. TONER, *President of the American Medical Association, Washington, D. C.:*—

DEAR SIR: By direction of the Surgeon-General, United States Army, I have the honor to forward for presentation to the American Medical Association a copy of the catalogue of the library of this office, in three volumes, royal 8vo., and to call the attention of members of the Association to the character of the collection and to the deficiencies which still exist in it. Since the printing of this catalogue a large number of foreign medical theses and pamphlets have been added to the library, making the total number of its titles about 65,000, but large as this may appear, it is not more than one-third of what our national medical collection should contain in order to place the medical writers and teachers of this country upon an equality with those of Europe in regard to facilities for consulting the literature of their profession.

The catalogue now presented is an alphabetical one of authors,

and only a sufficient number have been printed to supply the principal libraries and medical journals, hence it is impossible to supply copies to individuals. But a catalogue is now in course of preparation, arranged according to subjects, of which it is hoped that a sufficient number can be printed to supply those who need such a work. It is very desirable that, during the coming year, the deficiencies of the collection, especially in American medical literature, should be filled as far as possible in order that the subject catalogue may present a good bibliography of the subject, and to this end the assistance of physicians throughout the country is especially requested as regards the completing the files of American medical journals, transactions of medical societies, announcements of medical colleges, and reports of hospitals, asylums, boards of health, etc. etc. These medical pamphlets cannot be purchased, and the only prospect of obtaining them is from the garrets, closets, and shelves of physicians who may have preserved them, and may be willing to part with them in consideration of the importance of the object for which they are desired.

Very respectfully, your obedient servant,

J. S. BILLINGS,
Assistant Surgeon United States Army.

On motion the volumes were accepted, and the thanks of the Association were tendered to the Surgeon General.

Vice-President Dr. J. M. KELLER in the chair.

Dr. N. S. DAVIS, Chairman of the Section on Practice of Medicine, Materia Medica, and Physiology, read his address.

On motion, the address was referred to the Section on Practice of Medicine, etc.

Vice-President Dr. L. F. WARNER in the chair.

Dr. S. D. GROSS, Chairman of the Section on Surgery and Anatomy, then read his address.

On motion, the address was referred to the appropriate Section.

Dr. J. M. KELLER, of Kentucky, invited the Association to hold its next Session in Louisville, Kentucky.

The following was read by Dr. BRODIE :—

Mrs. W. B. WESSON presents her compliments to the ladies accompanying the delegates, and invites them and their escorts to a lawn party on Thursday afternoon from four till seven o'clock.

On motion, the Association adjourned until Thursday at 9 A. M.

THIRD DAY.

THURSDAY, JUNE 4.

The President called the Association to order at 9 A. M.

Dr. BRODIE read the order of business of the day.

He offered as members by invitation Drs. J. A. GRANT, of Ottawa, and MURPHY, of Chatham, Ontario.

On motion, they were unanimously elected.

The following books were presented to the Association through Dr. BRODIE:—

First and second biennial reports of the State Board of Health of California.

Vital Statistics of New Orleans from 1769 to 1874.

Proceedings of the Michigan State Society.

On motion, they were received with thanks.

The Committee on President's Address presented the following, which on motion was accepted, and the resolutions were adopted.

Your Committee to whom were referred the recommendations and suggestions contained in the President's address would respectfully report as follows:—

We are fully in accord with the President concerning the propriety and desirability of establishing at some central position a physiological and pathological laboratory.

In view of the growing sense of the importance of carefully recorded facts and observations, we are fully impressed with the desirability of the publication of annual reports of the progress and discoveries of all chartered medical and sanitary institutions.

We also recognize the importance of concerted action on the part of the profession, and agree with the President in urging the formation of a complete system of State and local medical societies.

We would also recommend an extension of time of the session one day, making the length of the session four days. This is done in view of the fact that although the arrangement of the Sections under the present circumstances is admirable, they occupy more than half of the time of the meeting, causing a lack of time for the proper and deliberate consideration of legislative matters. When, in connection with this, there is taken into consideration the fact that the over-generous hospitality of those who entertain the Association is apt to occupy much time, it will be seen that the time for the discussion of the papers is wholly inadequate.

We also look with much favor upon the President's recommendation of the organization of an International Medical Association, and would move the adoption of the following:—

Resolved, That in view of the lack of time in which to properly transact the business of the Association, an extension of one day is deemed advisable.

Resolved, That the President appoint a committee of five, of which he shall be chairman, to elaborate a plan for the organization of an International Medical Association and report at the next meeting.

Your Committee had also prepared a resolution in regard to memorializing Congress concerning the rank of the medical staff corps of the army, but find that they are anticipated by Dr. KELLER; they would, therefore, simply recommend on the part of the members of this Association, continuous personal application to the Representatives in Congress from their several districts in regard to this important subject.

JAMES P. WHITE,
JOHN D. JACKSON,
J. K. BARTLETT,
EDWARD SHIPPEN,
W. F. WESTMORELAND.

Dr. JAMES P. WHITE, of New York, stated that he had received a note from Dr. S. D. GROSS, of Pennsylvania, who had been called away by a telegram informing him of the dangerous illness of a member of his family, and that before leaving he wished to announce the death of Dr. HENRY MILLER, of Louisville, an ex-President of this Association, and for many years Professor of Midwifery in the University of Louisville, and afterward of the Diseases of Women in the Louisville Medical College.

As a proper expression of the feelings of the Association, Dr. GROSS had requested the presentation of the following preamble and resolutions:—

Whereas, This Association has heard with profound regret of the death of Dr. HENRY MILLER; and,

Whereas, It is meet and proper that, when a great and good man falls in our ranks, a suitable record should be made of the event; therefore, be it

Resolved, That in the demise of our brother this Association has lost one of its most estimable members, Kentucky one of her most eminent and successful practitioners, obstetric medicine one of her

ablest expounders, and the American Medical Association one of its best thinkers and writers.

Resolved, That this preamble and resolution be spread upon the minutes of our proceedings, and that a copy of them be sent to the family of the late Professor MILLER, with the assurance of our heartfelt sympathy in their bereavement.

Dr. WHITE, in presenting these resolutions, supported them in a brief speech eulogistic of the deceased, and in conclusion suggested that a committee be appointed to prepare a memoir of Dr. MILLER.

On motion, the preamble and resolutions were adopted.

Dr. L. A. SAYRE, of New York, moved that Dr. WHITE be appointed as the committee to prepare the memorial.

Dr. WHITE said that he would much prefer that it be prepared by the immediate colleagues of the deceased. He therefore made a motion to that effect, which was adopted.

The Chair appointed as such committee Drs. S. D. GROSS, of Pennsylvania, J. M. KELLER and E. S. GAILLARD, of Kentucky.

Vice-President Dr. L. F. WARNER in the chair.

Dr. KELLER, of Kentucky, announced that he had been requested by the Society of Boyle County, Kentucky, to bring before the Association the following resolutions adopted by that Society in reference to the late Dr. EPHRAIM MCDOWELL.

"*Resolved*, That in the opinion of this Society the time has come in which an effort should be made to erect a statue or some other suitable memorial in honor of Dr. EPHRAIM MCDOWELL, "the father of ovariotomy," who lived and died in our midst, and who performed his first operation for ovarian tumor here in Danville, in 1809.

"That with this view a committee of three be appointed from this Society to attend the approaching meeting of the Kentucky State Medical Society, who shall be empowered to lay the matter before the profession constituting that organization, requesting their aid in devising and executing such measures as may be deemed most conducive to the end in view."

Dr. KELLER, after reading the foregoing, offered the following preamble and resolutions:—

Whereas, A most laudable effort has recently originated in the Boyle County Medical Society of the State of Kentucky and in the Kentucky State Medical Society, to create a fund for the erection of a statue or some other suitable memorial in honor of Dr. EPHRAIM MCDOWELL, "the father of ovariotomy," English writers

to the contrary notwithstanding, who lived in the town of Danville, in the State of Kentucky, and who performed in that town the first ovariotomy in the year 1809;

Resolved, That the American Medical Association most earnestly indorse the action of the said County and State Societies, and as urgently commend the object to the generous consideration of the medical profession of the world.

After discussion, the resolutions were adopted.

The President resumed the chair.

Dr. THEOPHILUS PARVIN, Chairman of the Section on Obstetrics and Diseases of Women and Children, then delivered his address.

On motion, the address was referred to the appropriate Section.

Dr. J. P. WHITE, of New York, moved to set aside the order of business that Dr. M. A. PALLEN might read his paper on Gynæcology announced on the programme. The motion elicited much discussion, and it was finally decided that the paper, not having been reported from the Section to which it belonged, could not properly be read before the general body.

Vice-President Dr. W. Y. GADBERRY in the chair.

Dr. A. NELSON BELL, Chairman of the Section on State Medicine and Public Hygiene, then delivered his annual address.

On motion, the address was referred to the appropriate Section.

The Permanent Secretary read the following Report of the Committee on Prize Essays.

To the President of the American Medical Association:—

The Committee on Prize Essays have to report that they have received but one paper.

The committee, after careful examination of the essay submitted, are of opinion that, though it possesses considerable merit, it is not entitled to one of the prizes tendered by the Association.

G. K. JOHNSON, *Chairman.*
H. O. HITCHCOCK.

On motion, the report was accepted.

On behalf of Dr. GROSS, the Permanent Secretary read the following:—

PHILADELPHIA, February 17, 1874.

"Dr. S. D. GROSS:

At a recent meeting of the Philadelphia County Medical Society you were appointed chairman of the following committee of fifteen: S. D. GROSS, L. TURNBULL, W. B. ATKINSON, A. FRICKÉ, D. BUR-

PEE, H. LENOX HODGE, R. E. RODGERS, W. L. ATLEE, J. G. STETLER, M. O'HARA, D. HAYES AGNEW, I. S. ESHLEMAN, W. H. PANCOAST, ROBERT BURNS, EDWARD WALLACE, in accordance with the following resolutions:—

"*Whereas*, In view of the approaching centennial celebration, it is right and proper that this Society, embracing as it does in its organization the medical practitioners of the city and county of Philadelphia, should take the initiative relative to the medical portion of said celebration; therefore, be it

"*Resolved*, That we hereby invite our medical brethren of the world to assemble in medical congress in Philadelphia July 4, 1876, and we also invite the Medical Society of the State of Pennsylvania and the American Medical Association to hold their annual session at the same time, in order to discuss the important medical topics of the day.

"*Resolved*, That an executive committee of fifteen members, including the President of this Society, be appointed to carry forward the objects expressed by the foregoing resolutions.

Very respectfully,

H. LEAMAN,

Recording Secretary, Philadelphia County Med. Society."

He suggested that a committee of conference be appointed on this matter.

After some discussion, on motion of Dr. A. M. POLLOCK, of Pennsylvania, it was

Resolved, That a committee of fifteen be appointed by the President of this Association to confer with the committee appointed by the Philadelphia County Medical Society relative to the meeting of the American Medical Association in Philadelphia in 1876, and be required to report the result of their conference to this Association at its *next* meeting.

The President resumed the chair, and announced the following as the committee:—

Dr. A. M. POLLOCK, Dr. J. L. ATLEE, Dr. TRAILL GREEN, Dr. JOHN CURWEN, Dr. THO. LYONS, Dr. B. GILLETT, Dr. BENJ. LEE, Dr. A. H. HALBERSTADT, Dr. JAS. KING, Dr. JOHN LOWMAN, all of Pennsylvania; Dr. EUGENE SMITH, of Michigan; Dr. N. C. HUSTED, of New York; Dr. E. LLOYD HOWARD, of Maryland; Dr. J. H. WHEELER, of New Hampshire; Dr. L. F. WARNER, of Massachusetts.

The Permanent Secretary offered the report on American Medi-

cal Necrology from Dr. A. SAGER, which was referred, without reading, to the Committee of Publication.

The names of the following gentlemen were annouced as having been appointed Delegates to Foreign Bodies.

R. J. LEVIS, of Pennsylvania; D. G. BRINTON, of Pennsylvania; T. M. DRYSDALE, of Pennsylvania; E. C. HARWOOD, of New York; E. SEGUIN, of New York; L. C. LANE, of California; J. D. JACKSON, of Kentucky; A. J. ERWIN, of Ohio; GEO. W. BURTON, of Indiana; E. W. JENKS, of Michigan; J. MARION SIMS, of New York.

Dr. E. SEGUIN, of New York, submitted the following report:—

Mr. President and Members of the American Medical Association:

You sent me as a delegate to the British Medical Association and to other kindred European societies for the year 1873-4.

Ill-health did not permit me to attend other meetings than those of the British Association in London, and of the French Association for the Advancement of the Sciences in Lyons.

By both societies I was received for your own sake as the most worthy among you could have been, and allowed the most cordial hearing.

I took this opportunity to advocate, with slight variations, in London and in Lyons, a theme of great importance. I mean the question of harmonizing our means of observation and of record, and of instructing therein mothers and nurses.

The British Medical Association ordered the printing of my lecture, and the Section of Medicine of the French Association for the Advancement of the Sciences voted the nomination of a commission to arrange the preliminaries of an international agreement on this subject. The motion was firmly supported by Professor VERNEUIL, President of the Section of Medicine, and by Professor MAREY, of the College de France, and carried.

At this point I ask the concurrence of the American Medical Association, thinking that we must not now remain behind in a question in which we were ahead last year.

This question is of incalculable interest.

Our methods and instruments of observation are discordant in results and in scales; our clinical tables differ from nation to nation, from one hospital to another, and are almost ignored in private practice; family physicians are helpless to supply their share of the advancement of science, because they do not educate

mothers to be their clinical assistants, and mothers and nurses remain a prey to the vilest quackeries because we do not teach them better.

As soon as the object of this communication shall be attained, the observations of physicians will become comparable at a glance, and their record be as positive as those of the operations of the chemist, the physicist, and the dynamist.

Moreover, women will be more useful when they form a higher estimate of their functions in the sick chamber; and when they know that diseases are natural deviations from natural laws they will cease to look for supernatural means of restoring natural health.

These considerations could be much enlarged. To save time I cut them short, and conclude by asking the American Medical Association to form an international commission of physicians of high standing, speaking the European languages, and designing to go to Europe this summer.

To charge them to represent the American Medical Association before the British Medical Association, the German and French Association for the Advancement of Science, and other kindred societies; to promote interchange of ideas, and particularly to cooperate with them in any plan, scheme, or organization which would have for its direct object the uniform establishment and propagation of the methods and instruments of positive observation. And, finally, to invite them to report on the progress of this work at the next meeting of this Association.

On motion the report was received, entered upon the minutes, and the recommendations adopted.

Dr. ADAMS JEWETT, of Ohio, proposed to amend the Plan of Organization as follows:—

First sentence of paragraph eight of Article II., p. 403 of *Transactions* for 1873, reads as follows:—

"The *permanent members* shall consist of all those who have served in the capacity of delegates, and of such other members as may receive the appointment by unanimous vote, and shall continue such so long as they remain in good standing in the body from which they were sent as delegates, and comply with the requirements of the by-laws of this Association."

I propose that this sentence be amended so as to read as follows:—

The permanent members shall consist of all those who have

served in the capacity of delegates, and of such other members as shall have received the appointment by unanimous vote, and of all others who, being members in good standing of any State or local medical society entitled to representation in this body, shall, after being vouched for by at least three members, be elected to membership by a vote of three-fourths of the delegates in attendance, and shall continue such so long as they remain in good standing in the body of which they were members when elected to membership in this Association, and comply with the requirements of its by-laws.

This was laid over for one year.

The Permanent Secretary then read the Librarian's Report.

LIBRARY OF THE AMERICAN MEDICAL ASSOCIATION,
WASHINGTON, D. C., April 1, 1874.

MR. PRESIDENT: I have the honor to report, as Librarian, that during the past year, as shown by the accompanying catalogue, there have been added to the library sixty-nine distinct titles, exclusive of yearly volumes of transactions of societies, reports of hospitals and Boards of Health, and volumes of medical journals, where these have been previously catalogued as distinct titles. Perhaps the most important included in this list of the past year is the manuscript deposited by Dr. J. M. Toner, entitled "Physicians (list of the) of the United States, with their post-office address, and school of practice returned by the Assessor of Internal Revenue." This addition makes the library to consist at present of 431 distinct titles, and an analysis of these titles, as published in previous volumes, will show that the library, so far, is composed mainly of incomplete volumes and incomplete numbers of medical journals, society and hospital reports, a complete set of any publication being a marked exception rather than the rule; add to this pamphlets and volumes of comparatively little importance at the present day, and, with a few exceptions, they constitute the library of the American Medical Association. The literature of to-day finds but a slender representation upon its shelves; and this is due, in part, to a want of action upon the suggestion made by Dr. Ashford and the present librarian in previous reports, that the transactions of the Association be furnished as *exchanges* wherever a suitable return may be looked for to enrich the library. For example, the library is wanting in many of the valuable publications of the medical departments of the United States Army

and United States Navy, and it cannot ask for them with any good grace, as they are not supplied with our Transactions. Some of the leading medical journals of the country, as the *American Journal of Medical Sciences*, Boston *Medical and Surgical Journal*, New York *Medical Record*, New York *Medical Journal*, Louisville *Practitioner*, and others, receive the yearly volume of Transactions, and have done so for years, yet their publications are not represented on the library shelves; while other journals, which send their numbers regularly from month to month and year to year, receive no acknowledgment in this form. The Committee of Publication declares itself powerless to remedy this state of things, having no authority from the Association to act with discretionary power; and the librarian hopes that this year at least some notice will be taken of the suggestion.

The form of the Catalogue has been changed this year, and it is hoped advantageously, and will be adhered to in future. Accompanying this is an account of necessary expenditures and receipts during the year; and the Librarian takes this opportunity, in the name of the Association, to express thanks to all those who have contributed to the growth and preservation of the library, and to request that each and every society and institution having representation in this Association, and publishing its transactions or records, would furnish as full sets of the same as in their power, to the library.

Respectfully submitted,

WM. LEE, *Librarian*,
2111 Pennsylvania Avenue.

The report was accepted, and on motion of Dr. W. B. ATKINSON, the following was adopted:—

Resolved, That the Committee of Publication be empowered to exchange copies of our Transactions with all State medical societies and journals; also with the Bureau of Medicine and Surgery of the Army and Navy, and with the library of Congress.

Resolved, That a similar exchange be entered into with the various foreign medical societies.

On motion of Dr. J. J. WOODWARD, United States Army, the Committee on Conference with the College of Surgeons, London, relative to a nomenclature of diseases, was continued.

A motion by Dr. WILSON, of Michigan, of censure on a physician, was referred to the Judicial Council.

On motion of Dr. H. F. ASKEW, of Delaware, it was

Resolved, That a suitable die for a medal, with a likeness of Dr. N. S. DAVIS on one side, and the name and date of the organization of the Association on the opposite, be procured by this Association, and that hereafter one be furnished to each delegate on becoming a member.

The resolution was adopted, and Drs. TONER, WOODWARD, and KELLER were appointed a committee to procure the die.

On motion, it was

Resolved, That all present as well as future members of the American Medical Association, be furnished with the medal ordered by the Association.

Dr. N. S. DAVIS, chairman of the Judicial Council, reported that Dr. W. H. Myers, of Fort Wayne, Indiana, was a physician in good standing, and was exonerated from all charges preferred against him.

Dr. WILLIAM BRODIE, of Michigan, presented to the Association the original copper-plate on which were engraved the cards of membership used when the Association met in Detroit in 1856.

On motion, the plate was accepted, and placed in the archives, and a vote of thanks tendered to Dr. BRODIE for the valuable relic.

While waiting for the report of the Committee on Nominations, Dr. DAVIS, at the request of Dr. BRODIE, gave his views upon the method of conducting the business of the meetings.

Dr. BRODIE then introduced Hon. G. V. N. LOTHROP, of Detroit, who made a short address to the Association, after which it adjourned to meet on Friday, at 9 A. M.

FOURTH DAY.

FRIDAY, JUNE 5.

The President called the Association to order at 9 A. M.

On motion, it was unanimously agreed that the reading of the minutes should be omitted.

On motion, the following were appointed a Committee to digest a plan for an International Medical Association: Drs. J. M. TONER, of the District of Columbia; N. S. DAVIS, of Chicago; ALFRED STILLÉ, of Pennsylvania; AUSTIN FLINT, Sr., of New York, and J. S. BILLINGS, United States Army.

The Permanent Secretary read the following letter, which was ordered placed on the minutes of the Association, and the reports placed in the archives:—

BROOKHAVEN, MISS., June 1, 1874.

To the Secretary of the American Medical Association:

DEAR SIR: I have the honor of an appointment as a delegate from the Mississippi State Medical Association to the American Medical Association, which meets at Detroit this month. It will not be practicable for me to attend. I have hopes, however, that our State will have a representative present. I mail herewith reports of the Medical Missionary Society of Canton, China, for four years. These show something of the progress of Western medicine in that country. Whatever of interest they may be to yourself or to any part of the Association it is my pleasure to confer.

Respectfully,

J. W. BENNETT, M.D.

Dr. T. PARVIN, of Indiana, moved that an appropriation of $300 be made to recompense the Secretary for his services.

On motion of Dr. J. MARION SIMS, of New York, the sum to be paid was fixed at $500, and the motion was adopted unanimously.

Dr. W. H. BYFORD, of Illinois, as chairman, submitted the report of the Committee on Nominations, which, after various corrections, was adopted, as follows: —

The Committee on Nominations respectfully report that they suggest the following gentlemen for the various officers named:—

PRESIDENT.

Dr. W. K. BOWLING, *of Tennessee.*

VICE-PRESIDENTS.

1. Dr. WILLIAM BRODIE, *of Michigan.*
2. Dr. J. J. WOODWARD, *of United States Army.*
3. Dr. H. W. BROWN, *of Texas.*
4. Dr. H. D. DIDAMA, *of New York.*

TREASURER.

Dr. CASPAR WISTER, *of Pennsylvania.*

LIBRARIAN.

Dr. WILLIAM LEE, *of District of Columbia.*

COMMITTEE ON LIBRARY.

Dr. JOHNSON ELLIOTT, *of District of Columbia.*

ASSISTANT SECRETARY.

Dr. WILLOUGHBY WALLING, *of Kentucky.*

Committee of Arrangements.—Drs. EDWARD RICHARDSON, Chairman; LAWRENCE SMITH, ROBERT H. GALE, JAMES HOLLAND, HENRY BULLITT, J. M. KELLER, D. W. YANDELL, LEWIS ROGERS, R. C. HEWITT, all of Louisville.

Committee on Prize Essays.—Drs. JOHN DAVIES JACKSON, L. P. YANDELL, Sr., J. A. OCTERLONEY, all of Kentucky; THEOPHILUS PARVIN, T. M. STEVENS, of Indiana.

Committee of Publication.—Drs. F. G. SMITH, WILLIAM B. ATKINSON, D. MURRAY CHESTON, CASPAR WISTER, ALFRED STILLÉ, of Pennsylvania; WILLIAM LEE, of District of Columbia; H. F. ASKEW, of Delaware.

Next place of meeting—Louisville, Kentucky.

Time of meeting—First Tuesday in May, 1875.

The Committee also report the following nominations for Chairmen and Secretaries of Sections for 1875:—

1. Practice of Medicine, Materia Medica, and Physiology, Dr. AUSTIN FLINT, Sr., of New York, Chairman, and Dr. J. K. BARTLETT, of Wisconsin, Secretary.

2. Obstetrics and Diseases of Women and Children, Dr. W. H. BYFORD, of Illinois, Chairman, and Dr. S. C. BUSEY, of District of Columbia, Secretary.

3. Surgery and Anatomy, Dr. E. M. MOORE, of New York, Chairman, and Dr. THOMAS S. LATIMER, of Maryland, Secretary.

4. Medical Jurisprudence, Chemistry, and Psychology, Dr. JEROME COCHRAN, of Alabama, Chairman, and Dr. G. A. MOSES, of Missouri, Secretary.

5. State Medicine and Public Hygiene, Dr. H. I. BOWDITCH, of Massachusetts, Chairman, and Dr. H. B. BAKER, of Michigan, Secretary. Members: Drs. J. COCHRAN, of Alabama; D. A. LINTHICUM, of Arkansas; T. M. LOGAN, of California; R. G. BUCKINGHAM, of Colorado; B. H. CATLIN, of Connecticut; L. P. BUSH, of Delaware; F. HOWARD, of District of Columbia; C. B. NOTTINGHAM, of Georgia; H. A. JOHNSON, of Illinois; W. H. MYERS, of Indiana; A. G. FIELDS, of Iowa; D. W. STORMONT, of Kansas; J. D. JACKSON, of Kentucky; S. M. BEMISS, of Louisiana; S. FITCH, of Maine; E. L. HOWARD, of Maryland; H. I. BOWDITCH, of Massachusetts; H. B. BAKER, of Michigan; A. B. STUART, of Minnesota; A. G. SMYTHE, of Mississippi; D. V. DEAN, of Missouri; J. H. PEABODY, of Nebraska; J. W. PARSONS, of New Hampshire; E. M. HUNT, of New Jersey; A. N. BELL, of New York; A. J. ERWIN, of Ohio; H. BETTENGER, of Oregon; A. M. POL-

LOCK, of Pennsylvania; E. M. SNOW, of Rhode Island; R. A. KINLOCK, of South Carolina; J. H. VAN DEMAN, of Tennessee; D. R. WALLACE, of Texas; J. L. CABELL, of Virginia; A. T. WOODWARD, of Vermont; H. P. STRONG, of Wisconsin; JOHN FRISSELL, of West Virginia.

Committee on Necrology.—Dr. S. C. CHEW, of Maryland, Chairman; Drs. B. R. JONES, of Alabama; A. H. SCOTT, of Arkansas; G. L. SIMMONS, of California; G. W. RUSSELL, of Connecticut; L. P. BUSH, of Delaware; W. W. JOHNSON, of District of Columbia; A. J. SANDS, of Georgia; W. M. CHAMBERS, of Illinois; G. SUTTON, of Indiana; J. W. H. BAKER, of Iowa; C. V. MOTTRAM, of Kansas; L. P. YANDELL, SR., of Kentucky; ALONZO GARCELON, of Maine; A. SAGER, of Michigan; W. W. MAYO, of Minnesota; B. A. VAUGHAN, of Mississippi; D. V. DEAN, of Missouri; J. H. PEABODY, of Nebraska; J. H. WHEELER, of New Hampshire; JOHN BLANE, of New Jersey; W. H. BAILEY, of New York; GEO. MITCHELL, of Ohio; W. C. WARRINER, of Oregon; D. HAYES AGNEW, of Pennsylvania; CHAS. W. PARSONS, of Rhode Island; A. N. TALLEY, of South Carolina; JOHN H. CALLENDER, of Tennessee; T. J. HEARD, of Texas; LEVIN S. JOYNES, of Virginia; R. W. HAZLETT, of West Virginia; N. M. DODSON, of Wisconsin; J. J. WOODWARD, United States Army; W. S. W. RUSCHENBERGER, United States Navy.

Judicial Council.—Drs. J. K. BARTLETT, of Wisconsin; R. H. GALE, of Kentucky; J. B. JOHNSON, of Missouri; J. R. BRONSON, of Massachusetts; B. H. CATLIN, of Connecticut; FRANKLIN STAPLES, of Minnesota; W. T. BRIGGS, of Tennessee, in place of the seven whose terms expire at this meeting. Dr. A. N. TALLEY, of South Carolina, for two years, to fill vacancy. The rest of the present Council continued.

Special Committees.—Dr. H R. STORER, Chairman of a committee to report on American as compared with foreign winter cures, continued.

Dr. JOHN MORRIS, of Maryland, on the use of pessaries.

Dr. JOHN A. OCTERLONEY, of Kentucky, on cystic degeneration of the kidneys.

Dr. D. W. HAND, of Minnesota, on the diseases of Minnesota and the Northwest.

Resolved, That the permanent Secretary be requested to publish in connection with the report of this Committee full lists of all committees of the Association as at present constituted.

The Permanent Secretary then read the report of the Committee of Publication.

The Committee of Publication respectfully report that the MS. of the last volume was put into the hands of the printer at the close of July, 1873, and that it was distributed to the members of the Association about the middle of the ensuing October.

It is scarcely necessary to say that the last volume, being a small one, might have been published at an earlier date had it not been desirable to await replies to the annual circular containing the information needed to determine the size of the edition it would be prudent to issue. The importance of delaying the publication until this information is obtained may be readily understood by every member of the Association who has observed the many supernumerary volumes of bygone years annually exhibited by your Committee in their report, and they can only add that they have exhausted every effort to avoid an unneccessary accumulation of volumes.

In the report of your Committee last year the authors of communications were earnestly exhorted, for their own safety as well as for the credit of this Association, to spare us labor, to save your Committee any unusual responsibility and care in superintending the publication of their contributions. They beg again most earnestly to reiterate their counsel, the importance of which can scarcely be overestimated.

Your Committee deem it their duty also to call the attention of the Association to a subject of equally great importance. The reports of Sections at the last meeting, having been made by phonographers who were not medical men, were, as furnished by them, comparatively useless. The copy literally swarmed with errors, blanks, and unintelligible phrases to such an extent as seriously to impair the value of the reports. It need scarcely be affirmed that all discussions by medical men should be reported by persons having a medical education. For it is evident that in such matters the skill, intelligence, and industry of a layman, with extremely few exceptions, amount scarcely to anything. This is especially illustrated in the frequent experience of every one who reads the record of autopsies, the evidence of experts, etc., recorded in the secular press. A mistake in a few important words covers just the interval between sense and nonsense.

The discussions in the Sections are reported for the benefit of the whole profession, and if worth reporting at all they should be re-

ported accurately and well. A report even approximately correct cannot be made, except by one of medical education. It is sincerely hoped that this counsel will be heeded.

The following schedule exhibits the present number of each volume on hand and those disposed of since last report (see p. 61).

In concluding this report the Chairman begs leave respectfully to tender his resignation, and to ask to be discharged from further duty on the Committee.

After twenty years of continuous service he feels that he has performed his share of a labor not always of the most agreeable character, and that he has a right to ask that younger and fresher hands may be invited to these duties.

In his long term of service his sole aim has been to discharge his duties to the best interest of the Association.

All of which is respectfully submitted.

FRANCIS G. SMITH, Jr., *Chairman.*

The Secretary also read the following report of the Treasurer:—

The Treasurer has the honor to report, that as a result of more than usual discretion on the part of the last meeting of the Association, and the more than usual care exercised in referring matter to the Committee of Publication, the volume of Transactions is of moderate size, and more in accord with the original design of this Association, which was not to illustrate and publish great masses of medical matter that properly belonged to medical journals, and were of a size to warrant their publication as monographs. This Association has been publishing its Transactions for twenty-seven years, and over two thousand volumes have accumulated, for which, in consequence of their being odd volumes, there is no demand; as they occupy much space and are expensive to store, the Treasurer desires authority to dispose of them in such manner as he may find best, and offers the following resolution:—

Resolved, That the Treasurer is hereby empowered to make such disposition of a portion of the surplus volumes of Transactions as he may find most advantageous to the interest of the Association.

The following is a statement of the financial condition of the Association:—

RECEIPTS.

May 1, 1874—		
To balance for 1873.	$ 496 74	
To cash from Delegates at St. Louis . .	2,250 00	
To cash from permanent members . . .	1,824 12	
To discount on bill T. K. Collins . . .	91 38	
		$4,662 24

DISBURSEMENTS.

By cash—Committee of Arrangements meeting at St. Louis	$ 182 35	
By cash—postage and exchange on draft .	2 65	
By cash—Dr. Wm. B. Atkinson, expenses of traveling, postage, etc.	123 10	
By cash—Dr. Wm. B. Atkinson, as per resolution of the Association	500 00	
By cash—Dr. Wm. Lee, expenses of librarian.	5 90	
By cash—Dr. Wm. B. Atkinson for postage and expressage	4 50	
By cash—T. K. Collins, for paper, plates, drawings, printing and binding 900 copies of Transactions, Vol. XXIV.	1,827 68	
By cash—Henry M. Barnes, for services in distributing Transactions	50 00	
By cash—Henry C. Lea, for cash advanced for porterage, freight, and material required in distribution of Transactions . . .	35 09	
		2,731 27
Cash balance on hand		$1,930 97

Audited and found correct.

FRANCIS G. SMITH, JR.,
Chairman Committee of Publication.
WM. B. ATKINSON,
D. MURRAY CHESTON,
ALFRED STILLÉ.

The following is the resignation of the Treasurer accompanying the report:—

The office of Treasurer has been held through the favor of this Association by the present incumbent for nineteen years, and he now indulges the hope that in consideration of his long services he may be granted a release; therefore, thanking the Association for its long-continued confidence, he offers his resignation.

CASPAR WISTER.

On motion the reports of the Publication Committee and Treasurer were accepted, and, except such portions as referred to the resignations, were adopted.

Dr. WILLIAM BRODIE, of Michigan, offered the following resolution, which was adopted unanimously:—

Resolved, That in view of the eminent services of Drs. WISTER and SMITH, we respectfully return to them their respective resignations, and insist that they shall continue in the performance of the duties of their respective offices.

At this juncture the Secretary announced the reception of the following telegram:—

CINCINNATI, O., June 5, 1874, 9.15 A. M.

Secretary of the American Medical Association:

Dr. GEORGE MENDENHALL, Ex-President of the Association, died last night.

CHARLES MENDENHALL.

The reception of the telegram caused expressions of regret in all portions of the house, and a motion was at once passed requesting the President to appoint a committee to draft suitable resolutions in reference to the deceased.

The chair appointed the following committee: Drs. J. A. MURPHY, RICHARDSON, A. E. HEIGHWAY, and WM. CARSON.

Dr. KELLER, of Kentucky, offered the following resolution, which was adopted:—

Resolved, That the resolutions offered and passed, appointing a committee to draft suitable resolutions in memory of Dr. MENDENHALL, deceased, be so amended as to instruct that committee to prepare said resolutions in time for publication in the Transactions of this session.

Dr. J. H. VAN DEMAN, of Tennessee, offered the following preamble and resolutions of thanks:—

Whereas, In view of the fact that the American Medical Association is now about to adjourn, it is appropriate that they show some manifestations of their gratitude and thankfulness to the citizens of the City of the Straits for their kindness to said Association; to the several railroads for the courtesies extended, and to the several officers and committees for efficiency and untiring energies in making our stay profitable and pleasant among them; therefore,

Resolved, That our profound esteem and grateful thanks are due and are hereby extended to his Excellency Governor BAGLEY, his Honor Mayor MOFFATT, Mrs. DAVID THOMPSON, Hon. J. E. JOY and lady, Mrs. PITTS, Hon. E. A. BRUSH and lady, Hon. PHILO PARSONS and lady, Dr. and Mrs. STEWART, Dr. and Mrs. BRODIE,

and Mrs. WILLIAM B. WESSON, whose hospitable hearts made us as welcome to their homes as the doors of their mansions have been opened wide; to the many citizens who have shown so many kind attentions; to the medical brethren of Detroit who have contributed so much to render our stay pleasant in their beautiful city; to the several daily journals and their respective reporters, who, for the correctness of their reports and faithful performance of their duties, cannot be excelled anywhere; and last, though by no means least, our honored President, Dr. TONER, the efficient Secretary, Dr. ATKINSON, the several standing committees, and *particularly* the Committee of Arrangements and their wide awake chairman, whom, for their earnestness and familiarity with their respective duties, we recommend to future officers and committees of like character.

Resolved, further, That we will ever hold in grateful remembrance our visit to Detroit, and may we, in our future meetings, in whatever locality we may be called together, be as hospitably entertained, as well received, and carry home with us the feeling manifested at this meeting—that the American Medical Association knows no South, no North, no East, nor West—all meeting under one common flag, the banner of a united country, to do battle against one common enemy, "the ills that human flesh is heir to."

Dr. DAVIS, of Chicago, arose to second the resolutions just offered by the gentleman from Tennessee, but more particularly to second that portion of the resolutions which referred to the Committee of Arrangements. "I cordially support all that has been said with reference to the hospitality that has been extended to us by the citizens and medical profession of the City of Detroit, and especially to express my gratification with regard to the faithful performance of the duties of the Committee referred to. I am sure I express the sentiment of the Association, when I thus speak of the excellent manner in which their duties have been discharged. I allude not so much to the outside hospitality as to the direct workings of the Association; the most judicious selection of rooms for the transaction of the general business of the session, and particularly for the programme of the work of each Section. Such arrangements are highly necessary to the performance of the work of the Association, and during the present session we have known where we were expected to work. With the exception of New Haven, which was the first place at which the Association met after adopting the plan of doing much of our work in Sections,

although I do not wish to say anything against the provisions for former Sections, the present session is the first time at which every section has been provided with rooms suitable and convenient in which to perform the work with good order and good time.

"I, therefore, hope that the resolutions will be most heartily and unanimously adopted."

Dr. BUCKHAM, of Michigan, asked for a standing vote, and the resolutions were adopted unanimously.

Dr. A. N. TALLEY, Chairman of the Section on Medical Jurisprudence, Hygiene, and Psychology, apologized on account of ill-health, and was granted leave to submit his address to the Committee of Publication.

On motion of Dr. KELLER, of Kentucky, the following resolution in reference to the address of Dr. GROSS, was adopted:—

Resolved, That, in furtherance of the views expressed by Dr. GROSS in his valuable address touching proper legislation to prevent the spread of syphilis, a committee composed of Dr. GROSS, Dr. N. S. DAVIS, Dr. J. M. TONER, Dr. J. MARION SIMS, and Dr. JOHN MORRIS, be appointed to report at the next meeting the most feasible plan for securing such legislation.

Dr. W. BRODIE presented a paper from Dr. PAUL F. EVE, of Tennessee, giving a record of what the West has done for American Surgery. Having been received too late for reference to the appropriate Section, it was read in abstract by the Permanent Secretary, and on motion, was referred to the Committee of Publication.

The Sections on Medical Jurisprudence, Hygiene, and Psychology, and on Obstetrics and Diseases of Women and Children, reported their minutes, which, on motion, were referred to the Committee of Publication.

Dr. A. GARCELON, of Maine, offered the following resolutions:—

Resolved, That the Committee on Nominations, at our subsequent meetings, be requested to hold evening sessions, or at such other hours as will not interfere with attendance upon the general sessions, thereby giving its members the opportunity of attendance upon the public addresses and discussions of the Association.

After discussion Dr. GARCELON withdrew it, and Dr. J. MARION SIMS, of New York, renewed it.

On motion, the resolution was laid upon the table by a close vote.

Dr. C. B. HALL, of Toronto, Ontario, submitted the following:

Resolved, That the Canadian physicians attending this meeting

of the American Medical Association cannot take their departure without giving expression to their sense of appreciation of the fraternal kindness extended to the medical profession of Canada by favoring them with invitations and bestowing upon them such generous hospitality.

Dr. HALL remarked that the word fraternal in the resolution had a special significance. It was expressive of the liberality of sentiment which should obtain between the different members of the medical profession. It is expressive of a sinking of the political divisions, if any have existed, and that we now meet upon a common level for the discussion of medical questions. We agree with you upon your great questions. There are none of the people of our country who have any enmity towards you; we know how to respect and admire the institutions and men of your country; we admire such characters as Washington, Jefferson, Lincoln, Webster, and others. There have some men appeared from various portions of your country upon the attendance of your deliberations, who are an honor to mankind. The doctor further spoke upon the resolution from a political, social, and professional stand-point. He closed with the hope that the meeting would be productive of mutual good.

Prof. JAMES H. RICHARDSON, of Toronto, sustained the resolution offered by Dr. HALL, and expressed his heartfelt thanks for the kind manner in which the visitors from Canada had been received. He had met with extreme friendship and welcome on all sides. He scarcely felt that he was an alien, and felt no embarrassment. On behalf of others invited, he would second the motion of Dr. HALL.

Prof. N. S. DAVIS, of Illinois, responded with pleasure to the sentiments which the gentlemen who are our visitors have expressed, and who by their presence have contributed to our enjoyment. After all, one of the greatest benefits received at our meetings is the feeling of cheerfulness and pride in our profession, and the renewed determination to make it honorable, to say nothing of that magnetism which has more to do with curing our patients than our pills and powders—this was quite as much our object as to learn of new remedies. It makes our enjoyment higher and more impressive if we can shake hands with a delegation from over the lines in sympathy with us. He wished for a delegation from every civilized country on the globe. The spirit of humanity demands toleration and universal sympathy and science. We will heartily

hail our brethren from over the line every year. Dr. D. had been received with kindness in Toronto some years ago at a meeting of the Canadian Medical Association. So we have been gratified by their presence this year, and every year would work with them, and hail them with the welcome of friendship. Our idea was to gather out of all science the means of alleviating suffering, prolonging human life, and depriving death of some of its terrors, and so to benefit the human race. This object knows no divisions or boundaries other than those of the human family.

The resolution was adopted by a unanimous vote of the Canadian physicians.

Dr. WILLIAM BRODIE announced that about 427 members and 100 ladies had been in attendance besides the Canadian delegation of fifteen.

Dr. BRODIE, in behalf of Mrs. Eliza S. Leggett, presented to the Society a book written by her father, Dr. VALENTINE SEAMAN, more than a hundred years ago, and also a pamphlet, showing that that gentleman was the first to introduce the doctrine of Jenner into this country; and the lancet with which the vaccination was made. On motion, the package was accepted with thanks.

The minutes of the other Sections were received and referred to the Committee of Publication.

On motion of Dr. BENJ. LEE, of Pennsylvania, it was

Resolved, That it shall be the duty of the Permanent Secretary to furnish the Commitee on Nominations, immediately upon its appointment, a complete list of the members of the Association and a copy of the minutes of the last meeting.

Dr. H. B. BAKER, of Michigan, offered the following proposed amendment to the Constitution, which under the rules was laid over until the next session of the Association.

"The officers of the several Sections shall be nominated by the Sections in and for which said officers are to serve."

Dr. EDWARD RICHARDSON, of Kentucky, Chairman of the Committee of Arrangements, extended a cordial invitation to all present, and especially to his Canadian brethren, to be present at the meeting to be held in Louisville, in 1875.

On motion of Dr. MOSES PORTER, of Michigan, a resolution of thanks was offered to PETER NEBROTH, janitor of the Opera House, and to the attendants in general, for their politeness and attention.

Dr. BRODIE, on behalf of the citizens of Detroit, expressed the great pleasure which they had experienced in entertaining the

members of the Association and the ladies accompanying them, and their hopes to again have the same pleasure and privilege.

There being no further business before the Association, the President, Dr. J. M. TONER, said:—

GENTLEMEN: Your labors are brought to a close. We are about to adjourn the twenty-fifth annual meeting of the American Medical Association.

Before putting the motion that shall at once terminate the session and my official relations to this body, permit me once more to thank you for the courteous and efficient manner in which you have supported and assisted me in conducting the business that brought us together, and congratulate you for the philosophic, thorough, and intelligent manner in which you have viewed and discussed the different questions that have been presented before us.

I am quite sure that this meeting will be conspicuous in our annals, and long remembered by all who have participated in its profitable deliberations and have partaken of the unbounded hospitalities of the people of Detroit. The character of the work done by us must serve to make this Association more extensively known throughout the world, and its purposes and its aims better understood both by the people and the profession of the United States.

I am confident, we all feel more than rewarded for our attendance by the new ideas we have gained and the actual increase of our professional knowledge, and by the cementing of old friendships and the formation of the many new and agreeable acquaintances.

And now I adjourn the American Medical Association to meet in Louisville, Kentucky, on the first Tuesday in May, 1875.

WILLIAM B. ATKINSON,
Permanent Secretary.

STATEMENT OF COMMITTEE OF PUBLICATION,

MAY 9, 1874.

	On hand April 10, 1873, and since received.	Delivered.	Damaged and sold.	Remaining on hand May 9, '74.
Volume I.	6	...	...	6
" II.	8	...	...	8
" III.	6	...	...	6
" IV.	6	...	...	6
" V.	183	4	82	97
" VI.	7	...	...	7
" VII.	8	...	...	8
" VIII.	149	4	...	145
" IX.	180	4	21	155
" X.	96	1	26	69
" XI.	116	2	...	114
" XII.	180	4	...	176
" XIII.	80	2	3	75
" XIV.	125	2	...	123
" XV.	125	2	...	123
" XVI.	273	2	9	262
" XVII.	62	2	...	60
" XVIII.	33	3	...	30
" XIX.	18	1	...	17
" XX.	4	1	...	3
" XXI.	7	...	...	7
" XXII.	216	7	...	209
" XXIII.	153	38	...	115
Proceedings	7	...	...	7

Volume XXIV.

Printed and received from binder		900 copies.
Delivered to members, etc.	683	
Delivered to medical journals	22	705
Remaining on hand		195

75 due members, but not yet called for.

CATALOGUE OF LIBRARY.

Catalogue of Additions, by Donations, to the Library of the American Medical Association, from April 1st, 1873, to April 1st, 1874.

Astruc (John). On Venereal Disease. 742 pp. 4to. London, 1754. Donor, J. M. Toner, M.D.

Atkinson (Wm. B., M.D.). Evidences of Life in the Newly Delivered Child. 3 pp. 8vo. 1873. Donor, Author.

Batchelder (J. P., M.D.). On Cholera. 45 pp. 12mo. New York, 1849. Donor, J. M. Toner, M.D.

Battey (Robert, M.D.). On Normal Ovariotomy. 42 pp. 8vo. Atlanta, Georgia, 1873. Donor, Author.

Beddoes (Thomas, M.D.). Hygeia. 8vo. Bristol, England, 1802. Donor, J. M. Toner, M.D.

Bell (John, M.D.) and *Condie* (D. Francis, M.D.). History of Cholera. 127 pp. 8vo. Philadelphia, 1832. Donor, J. M. Toner, M.D.

Boerhaave. Lectures on Physic. 6 volumes, 12mo. London, 1742. Donor, J. M. Toner, M.D.

Brigham (A., M.D.). On Cholera. 368 pp. 12mo. Hartford, 1832. Donor, J. M. Toner, M.D.

Carson (Joseph, M.D.). Discourse on Samuel Jackson, M.D. 32 pp. 8vo. Philadelphia, 1872. Donor, J. M. Toner, M.D.

Casanova (J. N., M.D.). On Cholera Morbus. 173 pp. 8vo. Philadelphia, 1834. Donor, J. M. Toner, M.D.

Christison (Robert, M.D.). On Poisons. 400 pp. 8vo. Philadelphia, 1845. Doner, J. M. Toner, M.D.

Damon (Howard F.). On Cholera. 41 pp. 8vo. Boston, 1866. Donor, J. M. Toner, M.D.

Davis (Nathan S., M.D.). Clinical Lectures on Various Important Diseases. 263 pp. 12mo. Chicago, Illinois, 1873. Donor, Author.

Dick (Robert, M.D.). Derangements of the Organs of Digestion. 231 pp. 8vo. Philadelphia, 1842. Donor, J. M. Toner, M.D.

Doctors (The People's). A Review by the People's Friend. 60 pp. 8vo. Cincinnati, 1830. J. M. Toner, M.D.

Drysdale (Thomas M., M.D.). On the Granular Cell found in Ovarian Fluid. 8 pp. 8vo. Illustrated. 1873. Donor, J. M. Toner, M.D.

Eupædia, or Letters to a Mother on the Watchful Care of her Infant. 144 pp. 12mo. London. Donor, J. M. Toner, M.D.

Fenner (E. D., M.D.). Southern Medical Reports. 1 vol. 8vo. New Orleans. Donor, J. M. Toner, M.D.

Fordyce (George, M.D.). On Fever. 2d Edition. 403 pp. 8vo. Philadelphia, 1846. Donor, J. M. Toner, M.D.

Francis (John W., M.D.). Discourse before the New York Academy of Medicine. 112 pp. 8vo. New York, 1847. Donor, J. M. Toner, M.D.

Hand (H. C., M.D.). Infant Mortality. 5 pp. 8vo. St. Paul, Minnesota, 1872. Donor, J. M. Toner, M.D.

Harrison (John P., M.D.). Essays and Lectures on Medical Subjects. 192 pp. 12mo. Philadelphia, 1835. Donor, J. M. Toner, M.D.

Health—

California State Board of Health, Report of the. 113 pp. 8vo. Sacramento, 1871. Donor, J. M. Toner, M.D.

Cholera, Report on the Mortality of, in England. 474 pp. 8vo. London, 1852. Donor, J. M. Toner, M.D.

Cholera, New York Board of Health Report on. 106 pp. 8vo. New York, 1849. Donor, J. M. Toner, M.D.

Cholera in Paris, Report on. 199 pp. 8vo. New York, 1849. Donor, J. M. Toner, M.D.

Massachusetts State Board of Health (Report of the), 1871. Donor, J. M. Toner, M.D.

Philadelphia, Reports of the Board of Health for the City and Port of, for 1864, 1865, 1866, 1867, 1868, 1869, 1870. Donor, J. M. Toner, M.D.

San Francisco, Report of the Health Officer of the City and County of, 1873. Donor, J. M. Toner, M.D.

Washington, D. C., Report of the Board of Health of, 1873. Donor, J. M. Toner, M.D.

Heberden (Wm., M.D.). Commentaries on the History and Cure of Diseases. 214 pp. 8vo. Philadelphia, 1845. Donor, J. M. Toner, M.D.

Heustis (Jabez W.). Diseases of Louisiana. 115 pp. 8vo. New York, 1817. Donor, J. M. Toner, M.D.

Hospitals—

Baltimore Eye and Ear Institute (Annual Report of the). 8vo. 1873. Donor, J. M. Toner, M.D.

Columbia Hospital for Women, Washington, D. C. (Report of the), by J. Harry Thompson, M.D. 430 pp. 4to. Illustrated. Donor, S. C. Busey, M.D.

District of Columbia, Reports of the Board of Directors of the Children's Hospital of the, 1873. 8vo. Donor, S. C. Busey, M.D.

King's County Lunatic Asylum, Report of the Medical Superintendent. 8vo. 1873. Donor, Edward P. Chapin, M.D.

Massachusetts State Lunatic Hospital at Northampton (Report of the Trustees of). 8vo. 1873. Donor, Trustees.

Pennsylvania Hospital for the Insane (Reports of the). 8vo. 1857, 1858, 1859, 1874. Donor, Thomas S. Kirkbride, M.D.

Western Pennsylvania Hospital (Reports of the). 8vo. Pittsburg, 1872. Donor, J. M. Toner, M.D.

Western Virginia Lunatic Asylum, Report of the Board of Directors and Medical Superintendent of the. 8vo. 1873. Donor, Board of Directors.

Jackson (James C., M.D.) and *Austin* (Harriet N., M.D.). Our Home on the Hillside. 33 pp. 12mo. Dansville, New York. Donor, J. M. Toner, M.D.

Jameson (Horatio G.). On Yellow Fever. 46 pp. 12mo. Baltimore, 1823. Donor, J. M. Toner, M.D.

Latham (P. M., M.D.). Diseases of the Heart. 365 pp. 8vo. Philadelphia, 1847. Donor, J. M. Toner, M.D.

Oldbery (Oscar). Inaugural Address, National College of Pharmacy. 8 pp. 8vo. Washington, D. C., 1873. Donor, J. M. Toner, M.D.

Paine (Dr.). Reply to Attack by Henry I. Bowditch, M.D., upon Essay on the Principal Writings of P. Ch. A. Louis, M.D. 56 pp. 8vo. Boston, 1840. Donor, J. M. Toner, M.D.

Periodicals—

American Journal of Dental Science. Monthly. 48 pp. 8vo. Baltimore and London. F. J. S. Gorgas, M.D., D.D.S., Editor. 3d Series, Vol. VII., Nos. 1, 4, 5, 6, 8, 9, 11. Donor, Editor.

American Journal of Obstetrics and Diseases of Women and Children. Quarterly. 176 pp. 8vo. B. F. Dawson, M.D., Editor, New York. Vol. V., No. 4; Vol. VI., Nos. 1, 2, 3. Donor, Editor.

Archives of Scientific and Practical Medicine. Monthly. 96 pp. 8vo. New York. C. E. Brown-Séquard, M.D., E. C. Seguin, M.D., Editors. Vol. I., Nos. 3, 4, 5. Donor, Editors.

Bistoury (The). Quarterly. 28 pp. 8vo. Elmira, New York. Thad. S. Updegraff, Editor. Vol. IX., Nos. 1, 2, 3, 4. Donor, Editor.

Boston Journal of Chemistry. Monthly. 12 pp. 4to. Boston, Mass. Billings, Clapp, & Co., Publishers. Vol. VII., Nos. 11, 12; Vol. VIII., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9. Donor, Publishers.

Buffalo Medical and Surgical Journal. Monthly. 40 pp. 8vo. Buffalo, New York. Julius F. Miner, M.D., Editor. Vol. XII., Nos. 9, 10, 11, 12; Vol. XIII., Nos. 1, 2, 3, 4, 5, 6, 7. Donor, Editor.

Chicago Journal of Nervous and Mental Disease. Quarterly. 114 pp. 8vo. J. S. Jewell, M.D., H. M. Bannister, M.D., Editors. Vol. I., No. 1. Donor, Editors.

Chicago Medical Times. Monthly. 48 pp. 8vo. Anson S. Clark, M.D., H. D. Garison, M.D., Editors. Vol. V., Nos. 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12. Donor, Editors.

Cincinnati Lancet and Observer. Monthly. 64 pp. 8vo. E. B. Stevens, M.D., Editor. Vol. XVI., Nos. 4, 5, 6, 7, 8, 9, 10, 11, 12; Vol. XVII., Nos. 1, 2, 3. Donor, Editor.

Cincinnati Medical Advance. Monthly. 64 pp. 8vo. T. P. Wilson, M.D., Editor. Vol. I., Nos. 1, 6, 9, 10. Donor, Editor.

Indiana Journal of Medicine. Monthly. 46 pp. 8vo. Indianapolis. Thad. M. Stevens, M.D., Editor. Vol. III., No. 12. Donor, Editor.

Medical Examiner. Semi-Monthly. 63 pp. 8vo. Chicago, Illinois. N. S. Davis, M.D., F. H. Davis, M.D., Editors. Vol. XIII. Donor, Editors.

Medical Herald. Monthly, 14 pp. 8vo. Leavenworth, Kansas. Tiffin Sinks, M.D., Editor. Vol. VI., Nos. 11, 12; Vol. VII., Nos. 1, 2, 3, 4, 6, 7, 8, 9. Donor, Editor.

Missouri Dental Journal. Monthly. 42 pp. 8vo. Saint Louis, Mo. W. H. Eames, D.D.S., Editor. Vol. V., Nos. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12; Vol. VI., Nos. 1, 2, 3. Donor, Editor.

Nashville Journal of Medicine and Surgery. Monthly. 64 pp. 8vo. William K. Bowling, M.D., William T. Briggs, M.D., Editors. Vol. XI., Nos. 3, 4, 5, 6; Vol. XII., Nos. 1, 5, 6; Vol. XIII., Nos. 1, 2. Donors, Editors.

Pacific Medical and Surgical Journal. Monthly. 52 pp. 8vo. San Francisco, California. Henry Gibbons, M.D., Henry Gibbons, Jr., M.D., Editors. Vol. VI., Nos. 2, 11, 12; Vol. VII., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. Donor, Editors.

Pastor and People. Boston, Mass. Wm. M. Cornell, Editor. Vol. II., No. 12; Vol. III, No. 1. Donor, Editor.

Pharmacist and Chemical Record. Monthly. 32 pp. 8vo. N. Gray Bartlett, Albert E. Ebert, Editors. Vol. V., Nos. 2, 4, 6, 7, 8, 10; Vol. VI., Nos. 1, 2, 4, 6, 9, 10, 12; Vol. VII., Nos. 1, 2, 3. Donor, Editors.

Sanitarian (The). Monthly. 48 pp. 8vo. New York and Chicago. A. N. Bell, M.D., Editor. Vol. I., Vol. II., No. 1. Donor, Editor.

Southern Medical Record. Monthly. 64 pp. 8vo. Atlanta, Georgia. T. S. Powell, M.D., W. T. Goldsmith, M.D., Editors. Vol. III., Nos. 4, 5, 6, 7, 8, 9, 10, 11, 12; Vol. IV., Nos. 1, 2, 3. Donor, Editor.

Virginia Clinical Record. Monthly. 64 pp. 8vo. Richmond, Virginia. J. S. Dorsey Cullen, M.D., Editor. Vol. III., Nos. 1, 3, 5, 6, 8, 9. Donor, Editor.

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ADDRESS

OF

JOSEPH M. TONER, M.D.,

PRESIDENT OF THE ASSOCIATION.

ADDRESS OF JOSEPH M. TONER, M.D,

PRESIDENT OF THE ASSOCIATION.

GENTLEMEN OF THE AMERICAN MEDICAL ASSOCIATION:—

Custom has made it a duty for the presiding officer to deliver an address at the opening of each annual session. As the opportunity is one to be prized, though distrusting my ability, I hope with your indulgence to meet the requirements of the occasion. Your long line of distinguished Presidents[1] has gleaned the fields of inviting inquiry, and has so carefully garnered the gems of medical thought, and spoken such earnest words of counsel and encouragement, as to make it difficult to select new topics, or improve upon their recommendations and admonitions. My remarks shall be neither long, learned, nor abstruse, but, I trust, suggestive and practical.

This Association is a true medical republic. National and representative, catholic and paternal, it admits to membership dele-

	[1] NAMES OF PRESIDENTS.	BORN.	SAT AS PRESIDENT IN			DIED.
1	Jonathan Knight, M.D., Conn.	May 1, 1789	1846	May 5	New York	Aug. 25, 1864, aged 75.
2	Nathaniel Chapman, M.D., Pa.	May 28, 1778	1847	May 5	Philadelphia	July 1, 1853, aged 75
3	Alexander Stephens, M.D., N. Y.	Sept. 4, 1789	1848	May 2	Baltimore	Mar 30, 1869, aged 80
4	John C. Warren, M.D., Mass.	Aug. 1, 1778	1849	May 1	Boston	May 4, 1856, aged 78.
5	Reuben D. Mussey, M.D., Ohio	Jan. 23, 1780	1850	May 7	Cincinnati	June 21, 1866, aged 86
6	James Moultrie, M.D., S C.	Mar. 27, 1793	1851	May 6	Charleston	May 29, 1869, aged 76
7	Beverly R Welford, M.D., Va.	July 29, 1797	1852	May 26	Richmond	Dec. 27, 1870, aged 73
*	Jonathan Knight, M D., Conn.		1853	May 3	New York	
8	Charles A. Pope, M.D., Md.	Mar. 15, 1818	1854	May 2	St. Louis	July 6, 1872, aged 52
9	George B. Wood, M.D, Pa.	Mar. 18, 1797	1855	May 1	Philadelphia	
10	Zina Pitcher, M.D., Mich.	Apr. 12, 1797	1856	May 6	Detroit	Apr. 5, 1872, aged 75.
11	Paul F. Eve, M.D., Tenn.	June 27, 1806	1857	May 5	Nashville	
12	Harvey Lindsly, M.D., D. C.	Jan. 11, 1804	1858	May 4	Washington	
13	Henry Miller, M.D., Ky.	Nov. 9, 1800	1859	May 3	Louisville	Feb. 8, 1874, aged 74.
14	Eli Ives, M.D., Conn.	Feb. 7, 1779	1860	June 5	New Haven	Oct. 8, 1861, aged 82
15	Alden March, M.D., N.Y.	——, 1795	1863	June 2	Chicago	June 17, 1869, aged 74.
16	Nathan S. Davis, M.D., Ill.	Jan. 9, 1817	1864	June 7	New York	
*	Nathan S. Davis, M.D., Ill.		1865	June 6	Boston	
17	D. Humphrey Storer, M.D., Mass.	Mar. 26, 1804	1866	May 1	Baltimore	
18	Henry F. Askew, M.D., Del.	June 24, 1805	1867	May 7	Cincinnati	
19	Samuel D. Gross, M.D, Pa.	July, 1805	1868	May 5	Washington	
20	William O. Baldwin, M.D., Ala.	Aug. 9, 1818	1869	May 4	New Orleans	
21	George Mendenhall, M.D., Ohio	May 5, 1814	1870	May 3	Washington	June 4, 1874, aged 60.
22	Alfred Stillé, M.D., Pa.	Oct. 13, 1813	1871	May 4	San Francisco	
23	David W. Yandell, M.D., Ky.	Sept. 4, 1826	1872	May 7	Philadelphia	
24	Thomas M. Logan, M.D., Cal.	June 13, 1808	1873	May 6	St. Louis	
25	Joseph M. Toner, M.D., D. C.	Apr. 30, 1825	1874	June 2	Detroit	

* Names marked with a star served twice as president. No meeting was held in 1861, nor in 1862.

gates from all respectable medical institutions throughout the United States.

What a grand and imposing spectacle it is to see in this beautiful city by the great American lakes, near the northern boundary of our vast country,[1] assembled for the second time,[2] hundreds of leading physicians, brought together as a national medical council, prompted solely by a desire to promote the general good of the profession—a motive which speaks directly to the heart and head of every true physician.

Here are assembled the Nestors of the profession, who have won their laurels and wear them with modest dignity; the middle-aged who have just entered upon the enjoyment of their recently recognized but well-earned fame; and the young physicians, fresh from college, full of enthusiasm, and well instructed in the latest discoveries and improvements in the art and science of medicine, eager for the contest in which to win fame—all seated together, with an equality of rights and privileges; the retiring, the busy, and the expectant practitioner, forming a trinity of links in the great chain of professional life connecting the past, the present, and the future; experience, science, and enthusiasm fraternizing, and forming one of the grandest pictures of advanced civilization.

I am aware that there has been from the first meeting of this Association a contrariety of opinions as to its true province and best policy. Some would have it limited in numbers, exclusive and dictatorial if not coercive in its relation to the profession at large. There are those who would have it abandon all semblance of a convention, and devote its time to the discussion of scientific facts and the recent discoveries in medicine, to the exclusion of all other questions and purposes. A few would have it an arena where any and every subject that can enter the mind of a medical man might be introduced, without order or even definite purpose. Others would be content and feel rewarded for the expense and loss of time in the enjoyment of the social elements so lavishly evoked on all these occasions.

But the arrangement for scientific discussions and the exchange of professional views, with the social reunions which the average

[1] The territory of the United States extends from near the 25th to the 49th degree of latitude (or, including Alaska, to within the Arctic Circle), and from the 67th to near the 125th degree of longitude; embracing nearly 4,000,000 square miles, and over 40,000,000 population.

[2] The American Medical Association met in Detroit in 1856.

judgment of the gentlemen who are in the habit of attending the meetings from year to year has approved, come as near meeting the requirements and securing due consideration to every factor, social, ethical, and professional, that enters into and serves to advance the true interests of the whole profession, and bind it in one harmonious brotherhood, as any general policy that could at present be adopted.

Aggregations of individuals form communities, and intercourse establishes society. Common interests and enlightened sentiment, with frequent meetings and exchange of views, evolve dominant ideas. And ideas rule not only societies like ours, but the world.

Twenty-eight years ago this Association was organized[1] in the city of New York, on a basis to represent the regular profession of the United States. Whether it has always acted wisely, or done the best and all that was possible under the circumstances for the elevation and advancement of the profession, must be impartially judged by our successors. Whatever it has done, it will be conceded, has been done with disinterestedness and a sincere desire for the elevation of our noble calling, and for the more speedy and certain relief of human suffering. Of those who find fault I might ask—what organizations or institutions are perfect, or give even general satisfaction? They are not to be found among religious creeds. Nor are they to be found in any known code of laws. They do not exist. But the great improvement taking place throughout the world in all the conditions that regulate society and protect the rights of the individual is marvellous. And, though absolute perfection is not attainable, we are striving with encouraging success, to elevate and perfect, as far as possible, the art and science of medicine.

If I possessed the ability to draw a picture that could correctly represent the status of the profession and its organizations[2] through-

[1] The first meeting was held in the city of New York, May 5, 1846, on a call of the Medical Society of the State of New York for a National Medical Convention. This action was brought about chiefly through the far-seeing wisdom and active exertions of N. S. Davis, M.D., then of Binghamton, New York. All medical societies and institutions throughout the United States were solicited to join in the measure. A convention assembled, which led to our present organization. The institutions represented in the first meeting were: State medical societies, 7; local medical societies, 13; colleges, 14; hospitals, 2. Total 36 institutions, from 17 different States, sending in all 129 delegates.

[2] In 1846, when the American Medical Association was formed, there were but about 125 medical societies and institutions of all classes in the United States.

out our country at the period when this Association came into existence, and contrast it with one showing our present prosperous condition and numerous well-organized societies, the younger members would scarcely recognize them as representing the same profession. It is not too much to claim that this Association, by the mere moral support it gives in encouraging the formation of local medical organizations, has done immeasurable good, and added largely to this result. It fully recognizes the unity of the regular profession throughout the United States. At the same time it has erected a standard of medical excellence and ethical *esprit du corps* never before attained in America, and has persistently and publicly held them up for admiration and adoption. It has drawn with distinctness a line that separates the regular from the irregular practitioner, which will in the future as in the past be firmly maintained. And it is desirable, as far as practicable, to encourage uniformity in the plan and scope of all medical societies, which, in the sphere of their influence, correspond to our civil political divisions. And, further, I think we should continue our efforts to encourage these local medical organizations until every State and county in the United States shall have its medical society, holding proper relations with each other and with this body. The Association is now, and always has been, anxious to bring into its fold the leading physicians from every State, and from every city and village and rural district in the land, and has solicited and still invites original papers on any subject that can advance medical science.

It has published[1] annually from its organization a volume of contributions and regular and special reports of great value in the

At the present time there are over 1200. The first medical organization in the United States that I have seen any reference to was one in Boston, Massachusetts, in 1741. Another was formed in Philadelphia, Pennsylvania, 1765, of which John Morgan was a promoter and an active member. In 1766, the New Jersey Medical Society was formed. In 1773 the Americal Medical Society was formed in Philadelphia, Dr. William Shippen, President. In 1776, the Delaware Medical Society was formed; in 1781 the Massachusetts Medical Society; in 1784 the Connecticut Medical Society; in 1787 the College of Physicians, Philadelphia; in 1789 the Medical Society of South Carolina; in 1791 the New Hampshire Medical Society; in 1799 the Medical and Chirurgical Faculty of Maryland.

[1] The Transactions, as numbered, reaches twenty-four volumes. From an oversight of the early publishing committees, the Proceedings and Transactions of the first two meetings (1846 and 1847), which are known as the Proceedings of the National Medical Convention, are not included in the series.

different departments of medicine, on questions of immediate interest to the profession.

It must be apparent to all who are familiar with the history of medicine, or have enjoyed, for a considerable number of years, a position favorable for overlooking the great army at work in the wide field of professional duty throughout the United States,[1] that the concentration of medical thought and the scientific aspirations of the profession of the country, as expressed through this central Association, are such that by its unity of action it exercises more influence now over the public and the profession than ever before, or than would be possible without such combined association. This is particularly noticeable in States in which there has been recent legislation affecting the profession and public health.[2]

It is within the observation of all, that while the profession is advancing in knowledge and influence, so is the general intelligence of the people, who are yearly demanding greater protection to their health, and greater skill and ability on the part of their physicians in the various branches of medicine.

Education is synonymous with elevation. Knowledge, in medicine as everywhere else, is power and ability.

It is a source of sincere congratulation that our medical educational institutions are rapidly enlarging and perfecting their curriculums, and becoming more thorough and efficient in teaching the science of medicine.[3]

[1] The number of physicians in the United States who in 1870 paid Internal Revenue Tax was 50,000. This is in the proportion of one physician to every 760 of the whole population. The last United States Census, taken the same year, in the return of persons by occupation gives 62,383 as physicians, male and female; which is in the proportion of one physician to every 618 of the total population. In France and England there is but about one physician to every 2000 of the population, the proportion being much larger, however, in the cities than in the rural districts.

[2] The several States are gradually enacting laws to secure registration of births, deaths, and marriages, and establishing State Boards of Health. But, indeed, it is rather surprising that so few (California, Massachusetts, Michigan, Minnesota, and Rhode Island) have any laws upon this subject in successful operation. Maryland and Virginia have recently established boards. Massachusetts deserves to be followed as a model in her registration and health laws, as well as in their intelligent execution.

[3] In 1859 the Chicago Medical College (now the Medical Department of the Northwestern University of Illinois) adopted the three years course, and a system of graduated classes, and a lecture term of six months. In 1872 Harvard University adopted practically a similar course. I am not aware that any other college has yet adopted this plan. The system is working well in both institutions

The successful medical man must be fully up with the age and the times, conversant with the latest means of diagnosis, the theory of diseases and their cures. He must have tested the newest remedy, examined the most recent invention; he must have read the latest telegram. And, indeed, the genius of the profession, responding to these demands, has devised physical tests for an exact diagnosis in almost every important disease. There is scarcely a vital function, the normal or diseased action of which cannot be determined with accuracy through the aid of some chemical test or mechanical device.[1] The improvement in this direction is still actively progressing.

Perhaps, there is no branch of medicine brought so prominently before the public as that of surgery, or that has been so much improved within a few years. American surgeons can justly claim to have done their part to advance its efficiency. Their daring and successful operations, as well as their ingenious devices and numerous mechanical appliances, are the admiration of the profession everywhere.

In our cities, centre not only dense populations, with great wealth, but all the conditions and institutions most favorable for prosecuting special studies in the most thorough and satisfactory manner. It is in them, as a general rule, that society fosters and so frequently rewards with princely fortunes the pre-eminently capable and skillful physicians, as it does men of genius in other callings.

It is true, that in great cities, pretenders and charlatans also prosper; but, where this is a particularly noticeable fact, it may as a rule be fairly inferred that there is abundant room for physicians of first class ability. Indeed, physicians possessing this latter qualification are sure of employment, and are at home and welcomed

named. It has so much to recommend it that it is to be hoped all our first class colleges will adopt it within a few years.

In 1870–1872, returns from 51 medical colleges show 5776 matriculants and 1698 graduates. In 1871–1872, returns from 36 of the 60 medical colleges show 4956 matriculants and nearly 1400 graduates. In 1873, in 59 regular medical colleges there were 780 instructors employed. There were 6491 matriculant students, of whom 1941 received the degree of Doctor of Medicine. (See Report of Educational Department, 1873.)

[1] We shall enumerate but a few of the many appliances used in diagnosis, as they will readily occur to the mind of the physician. The dynamometer, the microscope, the ophthalmoscope, the laryngoscope, the rhinoscope, the stethoscope, the pleximeter, the endoscope, the speculum, the sphygmograph, the spirometer, the thermometer, the anæsthesometer, anæsthetics, chemical examination of excretions, etc. etc.

everywhere. Even the best educated neighborhoods and most highly enlightened communities, if not supplied with acceptable physicians, possessed of adequate professional knowledge, and well acquainted with the latest improvements in medicine, will patronize the most plausible pretenders to such acquirements. The physician is a necessity. He is employed neither as a luxury nor from friendship, but from his actual or presumed skill and ability to prevent, relieve, or cure disease.

Progress is the order of the day—a law of the universe. He who does not constantly keep adding to his knowledge, and increasing his resources, must soon fall behind the more enterprising and better informed of his contemporaries. The physician who does not know that the community in which he lives is keeping a constant watch upon him, and contrasting his knowledge, skill, and success in his profession with those of the best and most successful medical men within the range of their reading or acquaintance, shuts his eyes to an important fact of great interest to himself.

The judicious and observing know that time regulates many apparently conflicting professional interests, and sets them working in a manner that in the end promises no discredit to our calling.

It is the judgment of those who watch closely the workings of this Association that questions of a hypothetical, local, or transient character ought not to be obtruded here. The time of the Association should be fully employed in scientific discussions and in the consideration of questions of necessary and proper legislation.

The absence of delegates from the Massachusetts Medical Society has been noticeable for several years. I trust that, at the present meeting, delegates from that old and influential organization may resume their rightful places. It richly deserves the congratulations of this Association and the profession of the country for lopping off all irregular practitioners who by various pretexts sought to fasten themselves upon it.

The Judicial Council of twenty-one, created at the last meeting, whose duty it is "to take cognizance of, and decide all questions of an ethical or judicial character that may arise," will, no doubt, greatly promote harmony and facilitate the business of the Association.

It is also confidently believed that the change in the plan of conducting the business before the different sections will add to the general interest and efficiency of our meetings. This change may require us to prolong our session to at least four days. Should

each chairman of the five different sections occupy the time of the general session allotted to him for an address which shall review the progress of medicine within the scope of his section, it is not likely they could all be delivered in less than two days. The regulation adopted for the stenographic report, and daily printing of the remarks of members, will make each speaker more deliberate and perhaps more anxious to have his views fully and carefully stated. With a view to secure more time for our deliberations I recommend that a regulation extending our sessions to four days be adopted.

The hope entertained by some physicians, of excluding irregular and incompetent practitioners from the profession by legislative enactment and penalties is, I apprehend, in our country not to be realized.

The thorough systematic education, the skill and availability of the services of the regular medical man must instinctively create in the minds of the people an appreciation of his superior claims to their confidence, and thus the profession become a law for its own protection, and which must prove stronger and more enduring than acts of assemblies or rulings of courts.[1]

Its efficiency and influence with the public rest solely on the amount of its useful scientific and practical professional knowledge. Let us at all times and seasons insist upon increasing these by every means possible. Ignorance and charlatanism should be made odious by contrast.

I wish to call the attention of the profession to the advantage of competitive examinations whenever appointments are to be made from among professional men to medical institutions as the best

[1] The earliest law passed by any of the American Colonies having reference to the medical profession was the 9th act of the General Assembly of Virginia, passed Oct. 21, 1639, to compel physicians and surgeons to declare on oath the value of their drugs and medicines. This law was revised and amended in 1645–1646, and again in 1657–1658. (See Hening's Statutes at Large, vol. i. pp. 316, 450.) The earliest law concerning medical men passed in Massachusetts was an act in 1649 applicable to chirurgeons, midwives, and physicians. (See Laws of Massachusetts, edition of 1672, p. 29.) The earliest legislation that established or regulated the fees of physicians in America that I have seen is the act of Virginia, Aug. 1736, entitled "An act for regulating the fees and accounts of the Practicers of Physic." This act permitted the courts to make a distinction between the amounts charged by the physicians regularly educated in medicine, and those who have been merely apprenticed. (See Hening's Statutes at Large, vol. iv. p. 509.)

mode of securing the most efficient, encouraging the industrious and careful student, and rewarding the really meritorious.

We all know that it is not true in fact, whatever may be the theory, that one graduate is just as good and as competent as, and no better than another. It is a duty we owe to ourselves and to the public to give our approbation and encouragement to those who, by special application and thorough study, become eminent in the profession. The man of real ability is usually retiring and without diplomacy; while the shallow pretender is full of tact, and is aggressive and persevering, and therefore, too often for the dignity and the advancement of medical science, is intrusted with the management of our public institutions.

It seems to me very desirable that a complete and well-endowed physiological and pathological laboratory should be established somewhere in the United States, and preferably in one of our great cities. Such a laboratory should be organized not merely for the elementary training of students, but for the encouragement of original research in histology, and in experimental physiology and pathology. The great utility of such institutions has been demonstrated by the experience of Germany, where they are to be found in almost every university town, and where they have rendered possible the brilliant series of discoveries which has given Germany, in modern times, the lead in all matters connected with physiology and pathology.

One or two similar institutions have recently been established in England, and we also must make an effort in this direction if we mean to keep pace with the profession in other parts of the world.

Medicine has always been more advanced through the fortunate discoveries of the few original observers than it has in centuries of adherence to dominant theories.

I wish further to suggest or to inquire whether our influence ought not to be given to the end that all medical institutions created by law or acting under charters should be required to make and publish annual reports, of their facilities, their labors, discoveries, and the extent of their operations, to the legislative body that created them. The principle should obtain that when a charter issues, the institution assumes a public character, and should be held responsible by the public for the manner in which it exercises its privileges, raises and expends its funds, and conducts its business. The public has a right to claim this much, that it may

profit by experience, correct abuses, and encourage only the deserving.

It has been estimated that there are about 2400 separate and distinct diseases. The number will probably be reduced as our knowledge of physiology and pathology and of the natural history of diseases becomes more general and accurate. What seems at first in many cases to be a specific difference, frequently disappears as we become more familiar with the range of circumstances and variations that enter into the producing causes, as well as those that may prolong and modify prominent symptoms.

Hospitals for the care and medical treatment of the insane have been provided for, most liberally by the general government and by nearly all the States. Being public institutions, and yet having the character of specialties, and possessing unequalled advantages, it seems but natural that the profession should expect reports from them with records of carefully studied cases, and detailed accounts of autopsies, and microscopic examinations of diseased brain and nerve tissue, of practical value to the general practitioner. A most important step has recently been taken in this direction by Dr. J. P. Gray, Superintendent of the New York State Lunatic Asylum at Utica, who requested that a special pathologist be appointed as his assistant in that institution. The doctor's recommendation to this end was unanimously passed by the legislature, and an accomplished microscopist was appointed to the position. A complete outfit for careful chemical and microscopical examinations, and for autopsies, and for taking photo-micrographs of diseased organs and tissues, was provided. The late reports already attest the wisdom of the measure.

If a hospital for the exclusive treatment of cancerous diseases were opened in some of our large cities, where cases could be kept under treatment and careful observation throughout all the stages of the disease, it would supply an urgent want, and do much toward developing and discovering more efficient means for combating this terrible disease. The pathology of this malady is now perhaps better understood than is the power of remedies over it. An institution of this kind has recently been founded in England.

The number and character of the medical works and journals annually published in the United States show that there is a rapidly increasing demand by the profession of the country for the most recent views in medicine and particularly of the leading histologists and pathologists of the world. Instead of the few, the majority of

American physicians are becoming industrious readers and careful students, and demand the latest and most scientific works.

Twenty-five years ago it would have taken eight or ten years to bring new views fairly before the profession for trial, that will now be read, reviewed, tested, confirmed, or contradicted, within six months, by scores of different observers throughout the country.

The telegraph even has been brought into requisition, and contributes its power to assist practitioners in distant cities to carry on consultations for the benefit of influential or distinguished persons.[1] Even the names of patients and their diseases are frequently given in the dispatches of the associated press, with the names of the physicians and the special treatment adopted. What more striking evidence of the progress of the age and of the intelligence of our profession, and of the people who are interested in and avail themselves of the latest inventions and advances in the physical sciences?

There are some hundreds of young physicians, of first-class ability, noted for their originality of thought and boldness of investigation, residing in different parts of our country, who are working with the scalpel, the microscope, and the test-tube in the spirit of true philosophers. But where we have ten such, we ought to have a hundred. It is from among such must come the leading medical men of the future. Young physicians are peculiarly adapted for experimental investigations by having the time, the enthusiasm, and the daring imagination to be original. They are also free from undue reverence for old ideas, and are without preconceived theories—conditions so essential for original experiment and discovery; for which age is found to be largely disqualified. It is, therefore, chiefly to the young that the profession must look for its original work and new facts, and while we are deeply grateful and ever ready to award due praise to the retired or deceased physicians, who have fairly won by earnest study and devotion to medicine, the highest honors of the profession, I feel it to be a duty to encourage by honorable commendation the deserving young men who, by virtue of genius, industry, and force of character, are conquering obstacles to increase the knowledge of our profession, and gain recognition and success. Such young men become the teachers of their teachers, the masters of the colleges.

Preventive medicine is now attracting the earnest attention of many of the most profound thinkers in the profession. Within

[1] Louis Napoleon, Greeley, Chase, Agassiz, Sumner, and many others.

the personal observation and memory of each of us there have been great advances made in the control and prevention of disease. There is still much to be done in this direction. I confidently look forward to the time when epidemics of cholera, yellow fever, and smallpox[1] will be prevented with a certainty just in proportion to the dissemination of the knowledge of efficient preventive measures, and the faithfulness with which the means are applied.

I think the time is not remote when the national government will feel justified in authorizing a central public health council of some kind to act as auxiliary and advisory to the different State and municipal health boards and quarantine organizations of the country.

The organization of State, county, and city boards of health should be encouraged by the medical profession, and authorized by law in every State. It is within the power of such bodies, if properly constituted, and filled with intelligent and energetic physicians, who will make sanitary matters a study, to add much to the security of public and private health. Indeed the organic law of each State should require every country and city to have such a board. Their mere existence tends to educate the minds of the people to an observance of hygienic laws. The aggregated experience and reports of such boards would add greatly to our knowledge of the prevalence of local and epidemic causes of diseases, and their distribution and recurrence throughout our country.

The climate in which we live, the pursuits and temperament of our people, and the terrible rush and enthusiasm which characterize a business life and its efforts in the new world, are in part at least responsible for a numerous class of diseases. In many individuals the stomach and the brain are kept in an abnormal state of excitement, almost from childhood. The consequence of this strain is manifested in numerous disturbances, mental and physical, even in persons who appear to be in good health, as well as in the recognized invalid. Cases of obscure and complicated diseases are believed to be more numerous, proportionally to ordinary sickness,

[1] The epidemic of smallpox in Philadelphia in 1872, which, according to reports of the Board of Health, caused 2585 deaths, and including deaths from smallpox in 1871, 4464, is an evidence of the lax manner in which is applied even the simplest and one of the best known preventives to a most loathsome and destructive disease. But Philadelphia is not the only city where smallpox has of late appeared and caused many deaths. The public should be made to feel the responsibility of neglecting to apply effectually all well-known preventives.

with us than with the people of any other country, and diseases of the nervous system are out of all proportion, more frequently met with among the active business and professional men and in the well-to-do class of society than in other countries. This class of cases, and all the producing causes, deserves to be carefully studied with a view to prevention or cure. There are annually many valuable citizens, statesmen, and professional men, carried off suddenly, whose demise in the prime of life and in the midst of their usefulness is attributable to over-worked brains.

The question of the influence of localities of different elevations upon health is now, more than at any previous period, engaging the attention of the profession. As population increases in the interior and elevated portions of our country, the number of facts observed bearing on this point will rapidly multiply and be recorded by separate observers, and at many different points. Facts thus accumulated can be digested, and results deduced that will largely assist to solve this problem.

I desire also to recommend that this Association take into consideration the question of the desirability of encouraging the formation of an *International Medical Association.* This can be done by inviting and securing the co-operation of the national medical societies of the different countries of the world. This Association, I would suggest ought to meet regularly every five years, or oftener, in some one of the different national capitals. The organization should be composed of delegates eminent in medicine, to be appointed from the several national medical bodies, in the proportion of say two members from each body and one additional delegate for every one hundred active members. The purpose of the congress should be to confer, and consider from an international point of view all questions that are promotive of public health, the advance of medical knowledge, and the true interests of the profession throughout the world. The present rapid and frequent communication of all civilized countries with each other makes us all akin, and the advancement of science renders this kind of professional intercourse desirable, to the end that frequent and free exchange of all that is known to be new and useful in medicine may be speedily brought to benefit mankind in every clime. The progress of science, the facility of intercommunication, the general and wide-spread intelligence, the claims of humanity, and the aspirations of the age and of our noble profession, demand the formation and support of some such organization. Should the measure

suggested, meet the approval of this Association, all the details and correspondence proper to be taken to secure co-operation can be left to a committee. I would suggest, however, that an effort be made to have the first meeting held in Washington City some time during the summer of 1876, while the American International Exposition will be open in Philadelphia.

Our country has much reason to be grateful to a kind and overruling Providence for the prosperity and general good health that have been vouchsafed to her citizens during the past year. A few cities in the South, however, have been visited by severe epidemics. You will immediately recall afflicted Shreveport and Memphis, where yellow fever of a most malignant type prevailed for over two months, carrying off thousands of valuable citizens.[1] The devotion of physicians to their professional duties in those places furnishes additional evidence of the heroism of medical men, even to the extent of sacrificing their lives in the line of duty. In Memphis seven physicians fell at their posts.[2] And at Shreveport four,[3] three of whom were resident physicians; and one, J. A. Richardson, of Jefferson, Texas, who had volunteered his services to these people in their hour of distress. At a most alarming period of the epidemic at Shreveport, in response to a call for professional aid, a number of physicians went there from New Orleans[4] to assist the over-burthened and thinned ranks of the practitioners of that city.

The departments of the national government in which exist an organized medical corps, the army and the navy—need no special mention or encomium from me. Their well conducted bureaus and the highly accomplished personnel of the medical staff corps are the pride of the profession of the whole country. Their works speak more fittingly their praise than could any words of mine. The great army pathological museum and the magnificent medical library which their thoughtful consideration for the profession

[1] In Memphis, in 1873, about 2000 died of yellow fever. In Shreveport, the same year, 759 died of yellow fever.

[2] The physicians dying of yellow fever in Memphis were Drs. Crone, Minor, Kennon, Hatch, Brount, Freeman, and Williams.

[3] The physicians who died of yellow fever in Shreveport were Drs. John B. Wise, T. P. Hotchkiss, J. L. Hebbette, and J. A. Richardson, the latter a volunteer physician from Jefferson, Texas.

[4] Drs. Finney, Hurd, Smith, Angel, Choppin, D. H. Bruns, Dividson, and perhaps others.

have created, fully attest their devotion to their high trust and their love for the advancement of medicine.

Within a few years a third medical department, known as the Marine Hospital Service, under the Treasury Department, has come into existence. Its direction is under the immediate supervision of an able medical officer, and its purpose is to provide hospital accommodations and medical treatment for sick seamen belonging to the merchant marine of the United States. At most of the ports, contracts are made with local hospitals to receive and treat the sailors. The government owning but ten hospitals, it consequently makes but few medical appointments. The service is therefore small, and may from its importance be considered in a formative state.

The medical officers of the army have not yet received that consideration and relief from Congress which you recommended at our last meeting. The committee appointed by you drew up a memorial, which was duly presented to Congress, they also called in person upon the members of the Military Committee of the Senate and House of Representatives, and prepared a bill entitled "A bill to increase the efficiency of the medical department of the army," which, if passed, would place the medical staff upon a footing of equality with the other staff corps. This bill was introduced into the House of Representatives Jan. 6, 1874, read twice, and referred to the Military Committee, who have not yet taken any definite action on the subject. Meanwhile the action of the American Medical Association and of your Committee has been heartily endorsed by the several State and county medical societies, almost every one of which has passed resolutions on behalf of their brethren in the army, and forwarded them to their representatives in Congress. The medical profession of the United States can never be content that the medical officers of the army shall continue to be treated with less consideration, in the matter of rank and pay, than the officers of other staff corps or of the medical corps of the navy, and will never cease their appeals to the representatives of the people until justice is done to this deserving body of medical men. I recommend, therefore, that a larger committee be appointed to plead their cause anew, that we may, if possible, secure favorable legislation before the present Congress adjourns; or, if this prove impracticable, that we may bring the matter to the attention of the next Congress so soon as it convenes.

The systematic observations in meteorology that are being made

throughout our country, under the direction of the United States Signal Office and the Smithsonian Institution, promise in their results to be of great value in the study of climatology and the causation of disease. I hope to see that system widely extended, and its stations multiplied through the whole country.

Electricity justly deserves the careful attention which has recently been given to it by a number of medical observers in our own and other countries. It is well known that electricity is manifested in different forms, as frictional electricity, galvanic electricity, and magneto-electricity. Each of these forms has probably different effects on living organisms, and each should receive special attention from the profession. It has been found that a current of electricity passed from the extremity toward the centre affects the nerves differently from a current passed in the opposite direction. The great power this agent is known to exercise over nutrition justifies the hope that it may be made serviceable in changing or retarding morbid growths, and in reviving lost nervous and muscular strength.

Within the last few years several additions of great therapeutical importance have been made to our *materia medica*, and it is worthy of note that the most valuable of these are not simple substances existing ready formed in nature, but organic compounds which we owe to the patient investigation of modern chemistry; and that their medical uses have not been ascertained by the accidental chances of a blind empiricism, but discovered in the course of exact experiments into the physiological effects of various organic substances, undertaken and carried out with all the precautions and refinements suggested by modern science. As examples of the class of experiments from which such results are to be anticipated, I may refer to those of Dr. H. C. Wood, in our own country; in Europe to those of Richardson and Liebrich. The latter observer has been singularly fortunate in discovering the therapeutical value of two new bodies, which, like chloroform, are chlorine compounds, and which, like it, though in a somewhat different manner, are of singular efficacy in procuring rest and the relief of pain: I refer to chloral hydrate, which has already gone into such extensive use, and to the new anodyne, croton chloral hydrate. Is it not a hopeful sign of the times that we should owe such remedies to that very spirit of exact science which is so often unjustly accused of tending towards nihilism and scepticism in medicine?

At each recurring meeting we are painfully reminded, by the absence of some one or more gifted members, whom we have been accustomed to meet, that death has been thinning our ranks. On the 8th of Feb. 1874, Prof. Henry Miller, of Louisville, Kentucky, sank to rest, in his 74th year.[1] He was president of this Association in 1859. At home and abroad, he was extensively known as a vigorous thinker and an able writer. For over half a century he enjoyed a large and responsible practice, and much of this time was a popular teacher.

In conclusion, I must beg the privilege of thanking you for your patient attention, and again reiterate my confidence in the belief of a steady increase and accumulation of knowledge in the world, and the undoubted progressive and permanent elevation of the profession in the United States. My conviction is decided, that in no period in the world's history have the rights of individuals and the wants of humanity been so well secured and so invariably accorded to the mass of the people as at the present time. And, further, I affirm that the United States, by her liberal institutions, the customs and intelligence of her people, conspicuously leads the nations of the earth for comprehensive benevolence and Christian charity. The heart and mind of the American people are educated from childhood to enjoy freedom of thought and liberty of action, and to exercise all their talents as their judgment dictates; at the same time they recognize a brotherhood in the whole human race, and award an equal opportunity to all in the struggle for fame and fortune.

"Do unto others as ye would that they should do unto you"

expresses the spirit and logic of the age, and renders invincible the crusade that is revolutionizing the world. With Tennyson I exclaim:—

"Ring out the old, ring in the new!
Ring out the false, ring in the true!

The inspired promises and hopes of mankind demand a kindlier

[1] The combined ages of the thirteen presidents of this Association now deceased give an average of nearly 74 years; the oldest having reached the age of 86, and the youngest dying at the age of 52. The average age of the twelve now living is 63 years; the oldest being 77, and the youngest 48. [Dr. George Mendenhall died June 4th, while the meeting was in session.] From records in my possession I find the average age at which 2000 American physicians died was 58 years. I find also the average age which 1000 United States congressmen have died is 62 years. The average age at which 1200 Presbyterian clergymen of the United States died was 57 years. The latter fact has been furnished me by J. M. Wilson, of Washington, D. C.

heart, a larger brain, and a more intimate connection and sympathy between all classes, the rulers and the ruled.

Finally, I beg your earnest support and wise counsel in conducting the business of the Association. The eyes of the profession of the United States are upon us. It is in our power to make this meeting one of marked success, both in the amount and character of the scientific work we may do. Whatever ability I possess is at your command. It is with me an earnest desire to win, by fealty to my trust, the approbation of this Association and of my brother practitioners through the country. I hope to deserve to have it written of me that I love my profession and my fellow-men.

MINUTES

OF THE

JUDICIAL COUNCIL.

MINUTES OF THE JUDICIAL COUNCIL.

THE Judicial Council met June 2d, 1874, at 9.15 o'clock A. M., at the office of Dr. WM. BRODIE, No. 64 Lafayette Avenue, Detroit, Michigan.

The members present were Drs. DAVIS, MORGAN, ASKEW, BARTLETT, GALE, LILLY, TODD, BRODIE, DUNLAP, HOWARD, and BENHAM.

There being a majority of the members of the Judicial Council present, a permanent organization was effected by Dr. BARTLETT moving that we proceed to ballot for a President of the Council; on motion of Dr. BENHAM, pending the balloting, it was decided that a majority of the members present should constitute a sufficient number for election to said office.

Dr. N. S. DAVIS, of Illinois, was unanimously chosen President, and on motion of Dr. MORGAN, Dr. S. N. BENHAM, of Pennsylvania, was unanimously chosen Secretary.

Dr. BARTLETT moved that seven members constitute a quorum of the Judicial Council to transact business. Carried.

Dr. LILLY moved that it require a vote of two-thirds of those present to constitute a Judicial decision.

Dr. DAVIS, Chairman of subcommittee on the Revision of the Code of Ethics, then read the following report. (*See* Minutes, p. 28.)

On motion of Dr. BARTLETT the report of the Committee was received.

Dr. MORGAN moved that the report of the Committee be adopted. After considerable debate on the subject by Drs. GALE, TODD, BARTLETT, BENHAM, DUNLAP, and HOWARD, the motion was carried.

The Council then proceeded to investigate the charges and counter-charges presented in the case of the "Bay County Medical Society." Dr. LANDON, delegate from the "New" Society, and Dr. TUPPEN, delegate from the "Regular" Society, were thoroughly examined as to the organization and working of their respective

societies: after hearing the opposing parties, and discussing the pros and cons thoroughly,

Dr. MORGAN moved that the delegates from the Society *known* and *advertised* as the "Regular Bay County Medical Society," be excluded on account of *irregularities*. Carried.

Dr. MORGAN also moved that the delegates of the other Bay County Medical Society be excluded on account of irregularities. Carried.

Dr. BENHAM was then instructed to report the action of the Judicial Council to the Association at as early an hour as possible.

The next business brought before the Judicial Council was the case of Dr. W. H. MYERS, of Fort Wayne, Indiana, and after duly examining the papers presented in the case, it was agreed that nothing was found in the papers but what would indicate that he is in good professional standing. (*See* Minutes, p. 48.)

On motion the Judicial Council adjourned to meet at Louisville, Kentucky, on the Monday preceding the meeting of the American Medical Association, May, 1875.

S. N. BENHAM, M.D.,
Secretary.

MINUTES OF THE SECTION

ON

PRACTICAL MEDICINE, MATERIA MEDICA, AND PHYSIOLOGY.

MINUTES OF THE SECTION

ON

PRACTICAL MEDICINE, MATERIA MEDICA, AND PHYSIOLOGY.[1]

THE Section met at 2.30 P. M., June 2d, and was called to order by the Chairman, Dr. N. S. DAVIS, of Illinois.

The first paper read before the Section was on *The Management of Eczema*, by Dr. L. D. BULKLEY, of New York. This paper gave rise to considerable discussion.

Dr. OCTERLONEY, of Kentucky, mentioned the use of carbolic acid internally in the treatment of eczema. He had seen beneficial results follow its administration in the treatment of other skin diseases, and desired the opinion of the author in regard to its utility.

Dr. BULKLEY remarked that he had seen the remedy used with prompt relief in some cases, while in others it gave no relief whatever. It is ordinarily administered in pill form, in from one-half to one grain doses every three or four hours. Sometimes ten or fifteen grains a day may be given without producing any disagreeable effect upon the stomach or other organs. He did not, however, place it among the valuable therapeutic remedies in the treatment of eczema or other skin diseases, except in very rare instances.

Dr. GROVER, of Massachusetts, asked if the author would state the dose of the liquor of tar.

Dr. BULKLEY replied that he administered the liquor picis alkalinis in from one-quarter to one-half drachm doses, three times a day, after meals, in a wineglass of water, and found that patients took it without complaint.

Dr. WOODWARD, of U. S. A., asked concerning certain cases of localized eczema, such as are sometimes seen on one or both hands.

[1] Phonographically reported for the Section by Dr. W. M. Carpenter.

In some of these cases the disease is of long standing, and in his experience had resisted every remedy except arsenic. When arsenic was administered, the disease would perhaps promptly disappear, but it would invariably recur, and apparently with no prospect of a termination. He would like to inquire what had been the experience of the author in such cases.

Dr. BULKLEY remarked, that in such cases he was in the habit of giving some preparation of tar internally. The remedy had been used some fifty years ago, and then discarded; but it was now being used again to some extent, and in his hands had been very serviceable. The treatment of these cases, however, was still *sub-judice.*

Dr. HALL, of Canada, said that he did not comprehend the paper, although it had the appearance of being a very valuable one. The great difficulty with him was to determine, according to the author's idea, where constitutional treatment, and where local treatment, should be adopted. The question is, where is the division?

He then related a case where there was a small spot of eczema on the arm of a man in whom after death an atrophied liver was found. Did the eczema depend upon the presence of a chronic disease of an internal organ in that case? He had no doubt but that there is some general condition upon which the disease depends; but is there anything of a general or constitutional character which can be regularly recognized? Is there a type of disease peculiar in itself? Is there a peculiar class of patients in whom the disease appears, or are there several forms of the disease, and must various forms of treatment be adopted if we would treat the cases intelligently?

Dr. HOUGH, of Massachusetts, remarked that he had used carbolic acid externally in the strength of a drachm to the ounce of glycerine, with great satisfaction in the treatment of eczema, and other skin diseases. He also mentioned an internal remedy which had not been referred to, namely, *protein*, which had given him far more satisfactory results than any remedy which he had employed. The great objection to it was its cost. In those cases where there was indigestion with acidity, which almost invariably accompanied this form of disease, digestion was improved, the acidity of the stomach was overcome, and overcome more promptly by the use of protein than by any other remedy he had ever used. The remedy was especially serviceable in scrofulous cases also accompanied with skin disease.

Dr. McLAUGHLIN, of Ohio, said, he arose for the sake of obtaining information in regard to eczema. From all he had ever read or heard upon the subject, he had not been able to understand, whether it was a constitutional disease, or a local skin disease, or both. If it is a constitutional disease, are local remedies the proper means for its cure? Should we expect to cure a constitutional disease by means of local remedies? If it is strictly a local disease, do we need to administer internal remedies? With him the subject had always been an obscure one, and he still sought for light with reference to these questions.

Dr. PIERCE, of Illinois, remarked, that he did not rise with the view of adding anything to what had already been said, but it was quite possible that the idea might be entertained that the disease is always associated with some constitutional trouble. His experience had not been corroborative of that idea. He had had considerable experience in the management of this disease, and he had always found it very obstinate. He had seen some instances where it appeared to be a constitutional and hereditary disease. He had suffered from the disease himself, and in his case thought it was hereditary. He was not aware that it was connected with any constitutional difficulty of any kind, yet under the influence of arsenic it had been cured, at least the disease had disappeared while he was taking the arsenic. He had treated other cases with the same remedy, and had failed to cure them. His opinion was that success in the treatment of the disease depended very much upon the powers of digestion and assimilation of food. In his experience, the disease had proved itself one of the most perverse of maladies, and had generally resisted a great variety of treatment.

Dr. BULKLEY referred to the use of central galvanization, as practised by Dr. Beard, of New York, in the treatment of eczema, and recommended its trial. He further remarked, with reference to the disease being local, that there are certain cases in which there can be no doubt with regard to its local nature; but the eczema such as disappears and then returns is most surely a constitutional disease. The first class of cases are to be regarded as cases of dermatitis, while the latter cases cannot occur without some constitutional disorder.

Dr. OCTERLONEY further remarked concerning the perversity and frequency of the disease, and did not regard it as surprising, that such a variety of opinions were entertained with regard to its nature and treatment. His experience had led him to the conclu-

sion that it was sometimes constitutional and sometimes local in its nature. Dr. BULKLEY it seems takes the ground that when the disease does not recur, it is not constitutional; but he had seen a number of cases in which the disease had all the characteristics of true eczema except its return. In some cases such results might be noted because the cases had passed beyond observation, but in others it was because the disease had been cured. He was of the opinion that arsenic was a very useful remedy, although it might not be so extensively useful among the poorer classes of our great cities as elsewhere. He obtained the idea of treating the disease with carbolic acid from the work of Dr. McCall Anderson, and first tried it in a case in which the diathesis seemed to be strongly established. The patient had eczema rubrum in both lower extremities, and presented a typical case. The treatment was four grains of carbolic acid three times a day, and continued almost steadily for two months. At first there was some vertigo from the effects of the medicine, but tolerance soon became established, and the cure was very rapid.

Dr. GRAY, of Illinois, said, that he felt reluctant to criticize the paper, but he sympathized with one gentleman in the feeling that if the statements in the paper are true, the subject is muddy indeed, if not hopelessly obscure. It seemed to him proper that the doctor should make a distinction between dermatitis, and eczema proper. He had discussed the two diseases in the same connection, and recommended remedies in such a manner, that we are led to suppose they are for the treatment of eczema, when it turns out that some of them are for the treatment of eczema, and some for the treatment of dermatitis. He (Dr. GRAY) believed, that the idea that eczema was a constitutional disease was purely hypothetical, and judged so from the remedies prescribed by the doctor. They are for the most part of a local nature, and those which are of a constitutional nature may serve in producing a local effect when administered internally. He believed that it was always a local disease, and purely so, and would depend entirely upon local treatment. In the perverse cases he was of the opinion, that the reason why they were not more easily cured was that the ultimate locality of the disease was not reached by the local application. In many cases the disease is deeply situated, and it is almost impossible to get remedies to bear upon it sufficiently direct to effect a cure; but believing that it is local in its nature, he went down upon it with remedies until the seat of the disease was reached.

Dr. JOHNSON, of Missouri, said, that he had been the subject of eczema varying in its nature, and had been subjected to almost constant treatment. He was not aware that he was suffering from any constitutional disturbance, yet he had suffered from the disease in its chronic form. He had taken a great many remedies without much benefit. A gentleman from the East Indies recommended him to apply the benzoated oxide of zinc ointment in sufficient quantity to form a good crust of from one-eighth to one-quarter of an inch thick, and allow it to remain upon the parts affected until it removed itself, which may require several weeks. He did according to the direction of that gentleman, and was cured of his eczema. He had followed the same plan in many other cases with success. There were, however, cases of constitutional eczema which he professed to have nothing to do with. Arsenic may produce temporary relief, but as far as a permanent cure was concerned, in some cases he had not obtained it. In such cases he had found a change of climate beneficial, especially where it was associated with the tubercular diathesis.

Dr. CANFIELD, of Connecticut, suggested the use of tar ointment locally, and arsenic internally, as the treatment most efficacious.

The paper was recommended for publication.

Dr. P. J. FARNSWORTH, of Iowa, then read his paper on *The Therapeutic Uses of Ammonia.*

After some discussion, the paper was referred back to the author with permission to publish, and a vote of thanks was tendered to the doctor for his paper.

Adjourned.

WEDNESDAY, JUNE 3d.

The Section was called to order at 3.30 P. M., Dr. N. S. DAVIS in the chair.

A paper on *The Indigenous Medical Botany of West Virginia*, by Dr. E. A. HILDRETH, was presented, but not read.

On motion, it was referred to the Chairman of the Section, with instructions to return it to the Permanent Secretary, with his recommendation to be considered as the action of the Section.

The report of the committee on *The Cultivation of the Cinchona Tree in the United States* was read and discussed briefly. It was endorsed and referred to the Committee of Publication. The committee was continued.

A paper on *The Mechanism of the Encephalic Circulation*, by Dr.

R. A. VANCE, of New York, was read by Dr. W. M. CARPENTER. After some discussion as to the disposition of the paper, it was re-referred back to the author for publication as having been read before the Section.

On motion, the consideration of the address of the Chairman of the Section was made the special order of business for Thursday's meeting.

Dr. BUCKHAM, of Michigan, then read a paper on *Uræmia*, which was discussed at some length.

Dr. BENNETT, of Ohio, remarked as follows: The writer of the paper infers that uræmia may occur independently of albuminuria, while, upon the other hand, he leaves the inference, that when albuminuria is present there is necessarily uræmia. Such inferences, in my conception, are not true. My observations upon several cases have led me to different conclusions. The cases were those in which the patients had passed large quantities of albumen without diminution in the quantity of urine, but, on the contrary, sometimes very much increased, reaching as high as eight pints daily, and loaded with albumen to one-third of its bulk. In these cases no symptoms of uræmia were present, the only symptoms being those which might be expected in connection with the discharge of such enormous quantities of albumen. Repeated examinations were made for casts, but none were ever found. The specific gravity of the urine was low when the amount of albumen was large. No exact quantitative analysis was made, relative to the amount of urea passed, but it was approximately estimated that the normal amount was being eliminated. My explanation of these cases was, that from some cause there was an abnormal condition of the uriniferous tubules, but that they were not sufficiently diseased to give rise to exfoliation. One patient whom I have particularly in my mind had suffered from syphilis, primary and to some extent also secondary. There seemed to be simply an abnormal function with regard to the amount of albumen that the kidneys eliminated. From these cases, I am convinced that we may have albuminuria without uræmia, and without apparent organic change in the kidneys.

Dr. BUCKHAM remarked, that in his paper he had simply stated matters of fact as observed by him. He had found, in fact, that uræmia may be present in sufficient force to produce many symptoms without necessarily having associated with it albuminuria. Whether the converse was true, that albuminuria may occur with-

out the development of symptoms of uræmia, he had not had sufficient evidence to enable him to determine. With regard to the remarks of Dr. BENNETT, it is important to notice that he has not made any exact quantitative analysis of the urine relative to the amount of urea eliminated. In order to judge intelligently of the cases referred to, it was absolutely necessary that accurate quantitative analysis of the urine should be made to determine whether there is an accumulation of urea in the system. From such close and exact analyses, he was convinced that we may have uræmia sufficiently developed to produce death without albumen being present in the urine.

Dr. HYATT, of Iowa, asked with reference to the quantity of urea that must be present in the urine to be regarded as normal.

Dr. BUCKHAM, in reply, referred to Dalton's Physiology, in which was stated the amount of urea daily excreted by a medium sized healthy person. If then a patient is excreting one-fifth or one-tenth of the normal quantity of urea daily, and has symptoms of uræmic poisoning developed, he regarded it as a case of uræmia which does not necessarily have associated with it any other abnormal condition of the urine. If, again, by the administration of muriatic or nitric acid, ammonia or some of its compounds were eliminated, he regarded it as additional evidence that urea was present in abnormal quantity.

Dr. HYATT then raised the question, whether such compounds were not always found when such remedies were administered. He also further remarked, that it seemed to him that in those cases where analyses were made for the purpose of determining the amount of urea eliminated, several things must be taken into consideration. First, and perhaps the most important, is the disintegration of the tissues. How fast and to what extent are they undergoing disintegration? There is much less breaking down of the tissues at one time than at another. We may have a person in perfect health apparently, and yet from some mental or physical exertion an extraordinary amount of urates may be discharged in the urine. Such points must be taken into consideration, and it appeared to him that in the cases to which the paper refers, properly speaking, the first symptom is defective nutrition and assimilation. Now, if the kidneys are not able to eliminate an accumulation of poison resulting from such defective assimilation, that is, if they are not able to maintain the balance between the processes of disintegration and elimination, the patient is then thrown into a patho-

logical condition. Then the question arises, what is that condition to be called, in which there is this lack of balance? The writer of the paper admits that the kidneys are the organs for the elimination of the effete products, and if they fail to do their work, they should be regarded as being in a pathological condition. In consequence of the inability of the kidneys to perform their function, we have disease of the organs and uræmic poisoning. So far as cause and effect are concerned, the fault lies in the eliminating power of the kidneys, and the disease of the kidney is to be regarded as the primary factor and not the secondary. He did not understand that we have true uræmia independent of functional or organic change of the kidney.

Dr. BUCKHAM explained, by saying, that when disease of the kidneys is present he did not for a moment say that we do not have albuminuria. In every case in which disease of the kidneys is present and they are unable to eliminate the proper amount of urea, uræmic poisoning will follow. But there are cases other than those designated as albuminuria or Bright's disease, in which serious and it may be fatal symptoms are developed.

Dr. OCTERLONEY, of Kentucky, remarked, that it did not seem to him fully established that the discharge of a certain amount of urea from the system was necessary. Physiological experiments have shown that the kidneys can be extirpated without harm necessarily following. In looking upon Bright's disease, as a whole, without going into detail, we may say that there are two clinical varieties of the affection. One characterized by an early appearance of albumen in the urine, dropsy, etc., and the other characterized by the early development of cerebral symptoms often without any dropsy whatever. He had seen cases of Bright's disease run their entire course without the appearance of albumen in the urine. Again, there are many diseases in which albumen appears in the urine without anything more than a mere temporary disturbance of the circulation through the kidney. So he believed that it was not the mere appearance or disappearance of urea in the urine that constituted uræmia. We must go beyond that. Even if the urea is deficient, and symptoms of toxæmia are present, it is not certainly positive that the symptoms are due to an accumulation of urea in the blood. There may be toxæmia without uræmia. If it is true, as some late writers have announced, that the kidneys are not alone eliminating organs, but, both manufacturing and

eliminating, the position of the author of the paper may be very proper.

On motion, the paper was referred to the Committee of Publication.

Adjourned.

THURSDAY, JUNE 4th.

The Section was called to order at 2.45 P. M., Dr. N. S. DAVIS in the chair.

The first thing in order was the consideration of the Chairman's address, but, on motion, it was deferred until later in the meeting.

Dr. BULKLEY then read a paper on *A New Anti-Pruritic Remedy.*

Without any extended discussion, the paper was referred to the Committee of Publication, and the consideration of the address was then taken up.

Dr. GRAY, of Illinois, moved that the address be recommended to the Committee of Publication.

Dr. MCLAUGHLIN, of Ohio, arose and said, that before the motion was put he wished to make a few inquiries.

The first was in regard to bloodletting, and the second was in regard to certain medicines producing directly opposite effects according to the dose administered. He wished to know if the Chairman admitted or denied that bloodletting as formerly practised was proper, being practised so extensively, or did he condemn the common practice of to-day for not bloodletting more? In either case he wished to make some remarks, and in order that they should be made understandingly, he desired to know what views the Chairman wished to advance in his address.

Dr. DAVIS replied by stating, that his paper neither condemned nor affirmed the opinion that some medicines produce opposite effects according to the dose administered, but simply stated the fact that certain medicines were claimed to possess such power. It further states, however, that we are not aware that anybody has determined positively whether such assumptions are true or not, and such statements were instanced as apparent inconsistencies and illustrative of the vagueness of our ideas concerning the action of medicines.

With regard to bloodletting, the paper does not justify the full extent to which bleeding was formerly practised, but would rather inculcate the idea, that when bloodletting, purging, etc., embraced in a general antiphlogistic treatment, was practised as it once was,

such treatment was carried to an *excess*. It might be fairly implied from the paper, that the time had been when such practice was carried to an extreme; but, upon the other hand, it might be inferred that the practice adopted at the present time was to an opposite extreme; an extreme which may have done as much harm as bloodletting in its palmiest days. It is not to condemn either line of practice, but to condemn excess in either direction.

Dr. McLaughlin then continued as follows:—

With reference to bloodletting, I can go back in my experience further than most who are now present; extending over a period of nearly forty years, and during a part of the time when bloodletting may be said to have been fashionable. I well recollect when all the high grades of inflammatory action were treated by free bleeding. I approved of such treatment then, and I approve of what I did now, and yet I do not bleed in my present treatment of the same affections. I think I was right then, and I think I am right now. Now allowing my position to be a correct one, something has changed, and it must be that people are not sick now as they were then. That high grade of inflammatory action, sthenic if you choose, does not exist to such an extent now. Is not that the experience of the profession in general? The sthenic condition was present then, but when present now it is very much modified from what it was then. It is for that reason I bled then and bleed very much less now. In the years 1849 and 1850, physicians all over the land, without any educating from the schools or medical societies, laid aside the lancet with an almost universal accord, showing that they had bled for some reason, and further showing that that reason had passed away. In my present practice I rarely bleed in any case, and certainly not to such an extent as in older times I was accustomed to do.

With regard to the second point, do medicines produce strictly opposite effects according to the size of the dose administered? I believe they do. For instance, I have a patient who has a high febrile movement; if I give him half grain doses of quinine I shall increase the febrile movement; while if I give him ten or fifteen grain doses I very much mitigate the febrile movement, lowering the temperature, diminishing the force and frequency of the pulse, producing a sedative effect, just the thing desired. Here then we have a remedy which in small doses acts as a stimulant, and in large doses as a sedative. The same thing is true of digitalis and

several other remedies. I bring forward these items simply as the result of my own experience.

Dr. QUIMBY, of New Jersey, said, that he fully concurred in the happy medium in the treatment of disease which the paper strove to reach. That is what every practitioner should aim at in the practice of his profession. Now if we take the subject of venesection as an example, I hold, unlike the gentleman who has last spoken, that bloodletting is just as applicable to-day in proper cases as at any former time. I have been in practice fifteen years, and I feel obliged to say, that when I followed the teachings of Prof. Alonzo Clark and others, and administered stimulants and strong diet as the leading features in the treatment of pneumonia, peritonitis, congestion of the brain, etc., the rates of mortality were comparatively *large*. I firmly believe that the great mortality in cases of pneumonia is due to the excessive use of stimulants. So far as calomel is concerned, I believe that its beneficial effects are produced short of salivation. So far as venesection is concerned, I believe that physieians are gradually returning to its use, and many men are to-day using the lancet, who five years ago would have entirely discarded it. Another subject was brought up in the paper upon which I wish to make a few remarks, namely, alcohol. I believe that alcohol is one of the most pernicious remedies that can be employed in the treatment of disease. Physiological experiments have shown that alcohol has the power to precipitate pepsin, and yet it is administered to aid digestion! That which is most needed in the process of digestion is the presence of pepsin, consequently, how absurd to administer alcohol for the purpose of aiding digestion, when it has been proven that it invariably precipitates one of the most important agents in the digestive process, and thereby hinders digestion. I feel strongly of the opinion, that if physicians would treat their patients, who require something to aid digestion, without the use of alcohol, they would find them doing as well, if not better, than with it. The use of alcohol is an important thing with physicians, and the results produced by it they are in a great degree responsible for.

Dr. CHUBBOCK, of New York, remarked, that he had been in practice longer than Dr. MCLAUGHLIN, and though he did not find quite so large a proportion of cases requiring bloodletting, he found no change in the type of disease. He had not seen a patient sick with pneumonia, since 1836, who did not need the lancet. He did not believe the physician should lay aside such remedies, simply

because they were not fashionable. The best rule to follow was to exercise a good sound sober judgment, and when this was exercised good practice is generally found. With regard to alcohol, he fully concurred with the last gentlemen who spoke, and he would prefer a pint of milk to a tablespoonful of alcohol.

Dr. ROUSE, of Michigan, remarked that the points in the paper were taken against abuses, and it seemed to him that they were well taken. The attention of the profession has been called to the various abuses of remedies and measures in the treatment of disease. That places the paper in a position which can hardly be said to be a fit subject for discussion. With regard to bloodletting, he was of the opinion that the proper amount of the measure is proportionate to a great extent to the locality in which the patient lives. A malarial region may require little or no bleeding, while some other localities may require the frequent use of the lancet. The Eastern and Northeastern portion of the country may bear the frequent use of the lancet, while in the Western portion it is but very poorly borne. This is about in keeping with the opinions expressed by the physicians from the various portions of the country.

Dr. BUCKHAM, of Michigan, remarked, that with regard to remedies, it was hardly profitable to determine here in council, what class of remedies is to be used in the treatment of various diseases. He did not approve of the entire exclusion of alcohol from our resources for the treatment of disease. If the case can be treated safely and successfully without it, very well; but there are cases, such as fevers, etc., where the use of alcohol may be of the utmost service. In such cases the digestion may be so disordered or destroyed that it is impossible to sustain the patient by means of food. Under such circumstances, the use of alcohol may serve to carry the patient over to a point at which digestion may again be established, and the patient cured, when otherwise his disease would have proved fatal. He did not think we should discard any remedy simply because it had been abused. He was also of the opinion that the practice of one section of the country was not applicable to another. He found from his own experience that while at Toronto he used to bleed considerably, he could not now adopt that treatment in the Saginaw Valley. In short, every case should be looked upon by itself, and treated in the careful and judicious manner indicated in the Chairman's address. With the sentiments expressed in the address he heartily concurred.

The Chairman remarked, that while he did not wish to restrict discussion, yet he felt it proper to state that the particular object of the paper was to originate in the different Sections of the Association certain lines of investigation. Very much is lost simply because of not being in readiness for making proper observations when the opportunity presents itself, and the item desired to be presented was that some definite line of investigation be instituted so that when an epidemic of any kind made its appearance, the machinery would be ready for making the fullest observations. The aim is to arrive at some positive demonstration or some solution of a particular question. Let a committee be appointed for the purpose of following out some particular line of investigation, then go to work, and at the end of each year bring the results of their labors here and report them. When a line of investigation is started let it be kept up until some definite result is obtained. How intensely interesting and how important it is to find out the exact actual cause of disease. Suppose we but look back to last summer, when cholera made its appearance in some sections of our country. The disease followed such an erratic course, that even those who had made it a great study were completely in a quandary in regard to its cause and habits. We have no means of knowing definitely what had been the ozonic, thermometric, or hygrometric conditions of the atmosphere, or the exact course of the wind currents for a time preceding the appearance of the disease, during its progress, and after its disappearance, which might, perhaps, enable us to appreciate some tangible reason why the disease appeared and why it disappeared. We may jump and guess until Gabriel sounds his trump, without being any wiser than when we first began.

I had thought of having a committee of three appointed, who shall devise some plan of work on some definite line of investigation, and no matter if it shall take two years to bring about some definite conclusions. If this should be done in all the medical societies throughout the country, we could soon obtain an almost complete knowledge, for instance, of the atmospherical condition of certain localities, and in this manner be able, perhaps, to arrest any epidemic which might present itself. Then get another committee to go to work, men who are in daily contact with disease and willing to labor, who will inquire carefully into the clinical history of every case, for instance, of acute affections of the bowels. Let them make it their business to inquire from the earliest incep-

tion of each case down through its progress to its termination, and place it upon record. If this were done, how long would it be before all of our most alarming epidemics would be relics of the past rather than enemies of the present?

Then each committee should make a report to the chairman of each Section, say thirty days previous to each session, when it shall be placed on file as business of the Section to be acted upon at the coming session; and let that work be done for every portion of our country. When the different atmospheric conditions of each day are placed upon record, and their exact changes daily noted, and we can summon information from another record, concerning the greatest number of cases, of cholera or cholera infantum, for illustration, that have occurred in any particular day, and then compare the two, we shall arrive at some definite conclusion concerning the nature and habits of disease, and not till then. If this were done, we should not be groping in the dark relative to the causes of epidemics or endemics, and definite conclusions cannot be reached in any other way.

The first results may be imperfect; let them be so. But it will not take many years if conducted upon that plan, perhaps not more than ten, to secure more valuable material than can be accumulated in ten thousand generations without any definite plan of observation and investigation.

Dr. BULKLEY, of New York, moved, the adoption of the suggestions contained in the address, and nominated, Dr. TONER, of D. C., Chairman of the Committee on Meteorological Observations, and Dr. DAVIS, Chairman of the Committee on Clinical Observations.

The Committees as completed consisted of Dr. TONER, Chairman; Dr. WOODWARD, United States Army, and Dr. E. L. HOWARD, of Maryland, Committee on Meteorological Observations; and Dr. DAVIS, of Illinois, Chairman; Dr. H. A. JOHNSON, of Illinois, and Dr. J. B. JOHNSON, of Missouri, Committee on Clinical Observations.

The original motion of Dr. GRAY was then passed, and the address referred to the Committee of Publication, with request to publish.

Dr. GARRISH, of New York, then read his paper on *Hydrophobia*.

On motion, the paper was referred back to the author, with permission to publish as having been read before the Section.

Dr. E. W. GRAY, of Illinois, then read a paper on *Physiology, and its Relations to Practical Medicine.*

On motion, the paper was referred to the Committee of Publication.

Dr. E. SEGUIN, of New York, then made an exposition of his Method of Mathematical Thermometry, and an Exhibition of his Thermometers. The instruments differ from the old ones, in having the point of the normal heat of the body marked zero, instead of 98.4°. There is also a special instrument devised to take the heat of limited surfaces, as the forehead, the seat of formation of a tumor, etc.

These instruments serve to create an interest in the new method of observation advocated by Dr. SEGUIN. Instead of tracing the course of disease by curves difficult to make, and more difficult to read correctly, he uses only figures and sums up all the phenomena, which, tabulated by days and weeks, permit a more positive appreciation of the condition of the patient than can be gained from any other method.

On motion, a vote of thanks was tendered to Dr. SEGUIN for his communication, and an abstract of his remarks requested for publication.

The chair announced that the only paper now before the Section was by Dr. CALDWELL, of Maryland, on *Electricity as a Restorative Agent in Asphyxia and Narcosis.*

On motion, the paper was referred to a special committee consisting of Dr. EDGAR, Dr. BULKLEY, and the Secretary. The paper was referred by the committee back to the author with permission to publish as having been read before the Section.

On motion, the Secretary was empowered to make out the minutes of the Section for publication.

Adjourned.

G. E. FROTHINGHAM,
Secretary of the Section.

REPORT OF SUB-COMMITTEE OF SECTION ON PRACTICAL MEDICINE, MATERIA MEDICA, AND PHYSIOLOGY.

The paper entitled *A Descriptive List of the Indigenous Medical Botany of West Virginia*, by E. A. HILDRETH, M.D., which was referred to the undersigned for examination, contains a well-arranged catalogue of such plants and shrubs as are found in West Virginia, with a very brief statement of their reported medical uses. On comparing it with the catalogues of Drs. Porcher and Williams, published in the second volume of the *Transactions*, and with the still more complete one of Dr. A. Clapp, in the fifth volume of the *Transactions* of this Association, I do not find it to contain any plants or therapeutic facts not already published in the previous catalogues. Hence it is recommended that the paper of Dr. Hildreth be returned to him, fully acknowledging its merits, but declining its publication in the *Transactions* solely because of the fact that it would be a repetition of matter already in our previous volumes.

Respectfully submitted,

N. S. DAVIS,

Sub-Committee.

ANNUAL ADDRESS ON PRACTICAL MEDICINE.

DR. N. S. DAVIS, President of the Section of Practical Medicine, Materia Medica, and Physiology, read the following address:—

MEMBERS OF THE ASSOCIATION: By an amendment of the constitution of this national organization, adopted at the annual meeting in 1873, it becomes my duty on the present occasion to report to you "the more important advances and discoveries of the past year," in the departments of Practical Medicine, Materia Medica, and Physiology.

To judge correctly concerning the improvements and discoveries made in any important department of science or art in a single year, requires a minute knowledge both of the preceding condition of such science, and of its entire literature for the year under consideration. Hence the task involves much labor, and its proper performance needs the exercise of sound judgment; for it is not every novelty that constitutes a discovery, nor every new phraseology in the expression of ideas or facts, that constitutes an actual advancement.

Perhaps the chief improvements or additions to our knowledge in the department of physiology, during the year ending April 1st, 1874, are such as relate to the functions of the brain and nervous system. The experiments of Fritsch and Hoitzig, Nothnegal, Fourney, Ferrier, Dupuy, Carville, Bartholow, and others, for the purpose of determining more definitely the functions of particular parts of the brain, have attracted much attention. The novel methods adopted by these experimenters, consisting in some instances in the injection of destructive substances, colored with aniline, into the substance of the brain, and in others in the application of electric and galvano-electric action to limited portions of the cerebral hemispheres, and the striking results that followed, were thought by many to have brought a new era in the development of cerebral physiology, and to have overthrown many of the

opinions hitherto regarded as well founded. Up to the time of these recent experiments it was supposed that the gray matter of the cerebral periphery, being the seat of mental perception, was not amenable to direct excitation by stimuli. But when Ferrier laid bare the surface of the convolutions, and by applying his blunt electrodes, induced with readiness and apparent uniformity certain muscular movements, according to the convolutions touched, it appeared to demonstrate not only sensibility of the cerebral surface to stimuli, but also the special localization therein of motor functions. By the subsequent investigations of Dupuy, as detailed in his inaugural thesis, it is shown that the farradic currents used by Ferrier could not be restricted to the peripheric layer of the brain, but they readily penetrated to the striated matter and central ganglia, and, therefore, produced their effect on muscular movements by direct excitation of these deeper-seated parts. M. Carville, in repeating the same methods of investigation, more especially with the animals experimented on under the influence of anæsthetics, obtained results confirming the views of Dupuy. Very recently, Dr. Bartholow, of Cincinnati, availed himself of an opportunity to perform a limited number of experiments on the brain of a patient, a large part of whose skull had been removed by disease in such a manner as to leave a considerable extent of cerebral surface bare, including portions of both hemispheres.

The mode of experimenting differed from that of Ferrier chiefly in the use of fine needle electrodes penetrating the brain substance, instead of blunt ones resting on its surface. The results in producing muscular movements corresponded closely with those obtained by Ferrier on animals. And when, during the third experiment, the farradic current was rendered more intense, decided epileptiform convulsions ensued. While the results of these few experiments on the human brain correspond closely with those obtained by Ferrier, yet they are still more amenable to the objections made by Dupuy and Carville, because in making a subsequent post-mortem examination, Dr. Bartholow found his needle electrodes had penetrated from one to one and a half inches into the cerebral substance. The whole history of experimentation, involving the injury or mutilation of animals, for determining the functions of any part of the nervous system, shows that conclusions must be drawn from them with great caution. From a careful review of all these recent and highly interesting experiments, their combined results appear to confirm the previous views concerning

the functions of different portions of the brain, instead of overthrowing them. And if they have added anything to our physiological and anatomical knowledge, it is in indicating more definitely the exact points or localities in the periphery where the striated fibres forming the medium of communication between the central ganglia—as the corpora striata and optic thalami—and the gray matter of the convolutions touch the latter.

We had regarded the results of previous physiological experiments in connection with many pathological phenomena as sufficient to indicate clearly a primary centre for ordinary sensation in the optic thalami, to which impressions from all parts of the body are transmitted by one set of nerve filaments, and from which they are transmitted to some point in the periphery by some of the white fibres intervening between these bodies and the gray matter of the convolutions, where the impressions are mentally recognized, and the resulting volition is sent from the same part by another set of white fibres, first to the central ganglia represented by the corpora striata, and from thence to whatever set of muscles are required to obey the mandate of volition. Instead of indicating any new functions in the convolutions, or special organs of muscular sense, the recent experiments have simply indicated more directly the particular convolutions in contact with the conducting fibres communicating through the common centre, with particular sets of muscles. The observations of Dr. Eichorst (see *Virchow's Archiv*) on the degeneration and regeneration of cut and injured nerves are interesting and important. They were made on the nerves of rabbits, and appeared to establish the fact that cut and injured nerves first exhibit an accumulation of granular matter, increasing the bulk which appears to arise from a breaking up or degeneration of the medullary matter of nerves. The sheath of Schwann and the perineurine become swollen from serous transudation, while the axis cylinders remain but little changed. During the second week these exudative and degenerative changes gradually disappear and the process of regeneration becomes visible in the form of delicate and slender threads running into and extending from the injured end of the nerve. This reparative action is observable at the end of the second week, and continues several weeks before it becomes complete. Dr. Eichorst made no observations in regard to the time required for the nerve function to be restored. But from the slowness of the reparative process, as well as from other recently observed facts, it is rendered probable that

those cases of apparent speedy restoration of function after injury or excision of nerves reported by surgeons have been instances in which the parts received nerves from other sources. While I would not discourage investigations in any direction or in any degree undervalue the importance of a correct physiology of the nervous structures entering into the human body, yet I am strongly impressed with the idea that we are attributing too much to nerve influence, and too little to the influence of properties inherent in all living structures. We have come near to the standpoint of referring all impressions, healthy and morbid, to a primary reception by some part of the nervous system, and as a consequence of regarding all vital actions as in some way dependent on nervous influence. In this we are confounding nerve *sensibility* and nerve *force* with properties that are inherent in living organic matter, and are as clearly appreciable in the primary germinal cell, or granule of bioplasm, as in the most highly organized nerve structure. I do not allude to vitality or the abstract principles of life, for *it* is doubtless beyond human comprehension. Imparted primarily by the Creator to matter in certain modes of combination, and perpetuated by parent to offspring throughout the whole domain of organic nature, both vegetable and animal, it stands in its relation to the human mind as an ultimate fact, incapable of further analysis or explanation.

But when matter is thus endowed with vitality, it possesses certain properties that can be studied and comprehended, as readily as we study the properties of inorganic matter. It is easy to demonstrate that the germinal cell of the ovum or the acorn possesses a susceptibility to the presence of certain exterior agents, as heat, moisture, electricity, and a peculiar affinity by which it elects and combines with certain atoms of matter and rejects others, thereby effecting determinate changes that we call growth; as it is to demonstrate that an acid will unite with a base, or that the presence of a second acid will cause the rejection of the first and the formation of a new compound. Susceptibility and vital affinity are properties common to all living organic matter, whether in the primary germinal specks of bioplasm, or in the most complex structures of the human body. And they exert a controlling influence in all that relates to molecular changes in assimilation, nutrition, disintegration, secretion, and as a consequence in the evolution of caloric. These properties are capable of being modified or acted upon directly by all those pervading forces, sometimes

styled imponderable agents, such as electricity, heat, light, etc., and by the presence of many alimentary and medicinal agents. They are in no sense derived from the nervous structures, and can be modified only indirectly by nerve influence. Every system of physiology which does not recognize these elementary properties of all living matter as distinctly as it does the special functions of each organized structure, will be found defective. Not only will it be defective as a branch of science, but as the basis or point of departure for the study of pathology, it will continue to involve us in doubt, obscurity, and false conclusions.

MATERIA MEDICA.—The past year has not been made notable by the discovery of any new and valuable article of materia medica, or by new applications of old remedies, of such importance as to be worthy of special mention. What we most need, however, in this department is not the addition of new articles or new applications of old ones, but a more complete knowledge of the composition and properties, with a more exact appreciation of the *modus operandi* of such as are already on the officinal list. The progress of organic and analytical chemistry, and their application to the investigation of the composition and properties of medical agents, is constantly separating out the active principles and presenting them for use in more convenient and reliable forms, but most of our methods of testing the effects of medicines on the various functions of the human body are extremely defective. So true is this that the most diverse opinions still exist concerning the action of many of the oldest and most frequently used articles of the materia medica. And not a few of them—like opium, quinine, alcohol—are commonly regarded as capable of exerting directly opposite effects by simply altering the dose. That is, we are told that in small doses they are stimulant or tonic, and in large doses sedative or narcotic; but at what point in the progress of increasing the dose the action becomes reversed, no one appears able to point out with exactness. Perhaps in no other department of medicine do we find opinions and conclusions derived from investigations so partial or incomplete; and the adherence to names and classifications involving so much confusion. It is to this condition of our materia medica that we owe many of those apparently contradictory modes of practice which have done so much either to create scepticism, both in and out of the profession, or to foster the theory that the type and character of diseases

change with the cycles of time. The idea that the special type and character of diseases have undergone marked changes, and are far less active or sthenic now than in the earlier part of the present century, has become very general, both in and out of the profession. And this is alleged as a reason for the change in practice from depletion and antiphlogistics to nourishment and so-called stimulants. But if we analyze more closely the development of opinions and modes of thought, as presented in the medical literature of the last half century, we shall be forced to the acknowledgment that the idea of change in the character of diseases has followed rather than preceded the changes in the modes of practice, and that it really has no other appreciable facts on which to rest. In other words, it will be found to have been a simple theoretic idea, suggested to avoid the difficulty and scepticism arising from such various and apparently contradictory modes of practice.

We say *apparently contradictory*, for it is not certain that a more careful review of the *modus operandi* of the remedial agents used, would not show the most diverse in appearance, to have really reached the same end by different routes. For example, on the assumption of the chemico-physiologists that alcohol is respiratory food, acting as a stimulant to the organic functions and sustaining the temperature of the body, nothing could appear more opposite than to treat one case of fever or acute disease with arterial sedatives, evacuants, and alteratives, and another case of the same disease with alcoholic liquids and nourishment. But when we turn from the theoretical assumption to the results of positive experimentation, we find the ingestion of alcohol to be followed by a reduction of temperature, a retarding of capillary circulation and molecular change, and a diminution of nerve sensibility. In other words, we find the *assumed* stimulant to be a positive and universal *sedative* to organic and molecular changes, and anæsthetic to nerve sensibility.

Hence the practitioner who plies his patient freely with wine, whiskey, or brandy, is as certainly holding him under the influence of a powerful sedative, as was his ancestor who bled and physicked, or his contemporary who gave veratrum and alteratives; and we need resort to no supposable change in the type of disease to understand why all, if wielding their weapons with equal skill, arrive at very similar results. As already intimated, there is no other department of medicine that so urgently needs a thoroughly criti-

cal and experimental revision, as our Materia Medica. The work should be carefully planned and persistently pursued until the erroneous phraseology is corrected, and the masses of speculations and mere assumptions are replaced with positively observed facts.

PRACTICAL MEDICINE.—In the department of practical medicine, as in the case of Materia Medica, the past year has revealed no striking discoveries either in regard to the nature of sickness or the methods of treatment; yet it has been characterized by a genuine progress that is worthy of careful study.

History is said to be ever repeating itself. The human mind is ever tending to extreme views in all departments of study, and to hasty generalization from facts insufficient in number and imperfectly observed. And in no department of literature and science are these tendencies more strikingly illustrated than in the history of practical medicine.

The pendulum of professional opinion and practice has swung from one extreme to another, with almost as much regularity and certainty as if moved by the force of gravity. During the first half of the present century professional practice had reached the extreme of depletion and evacuants, when, checked by its own abuses, the return wave carried us in the short space of three decades, first to conservatism or expectancy, and then to full stuffing and so-called stimulation; until wine, brandy, and indiscriminate nourishment were made the instruments of abuses no less injurious to the human family than blood-letting and evacuants in their palmiest days. This last swing of the professional pendulum has just reached its widest divergence from the perpendicular, and one of the most gratifying evidences of progress in practical medicine the past year, consists in the plain indication to be seen in various quarters, that the pendulum has fairly commenced its return motion. The constantly increasing importance attached to fresh air, pure water, and frequent ablutions in the sick-room; the more careful adjustment of the quantity and quality of food to the capacity of the digestive organs for acting on it; the rapidly increasing condemnation of the indiscriminate use of alcoholic and other anæsthetic and narcotic agents; the occasional unsheathing of the long-neglected lancet, with here and there a bold, outspoken advocacy of its judicious use, and, above all, the better appreciation of the fact that a retardation of tissue metamorphosis and elimination is by no means equivalent to assimilation and nutrition, either

in health or disease, are marks of a genuine progress that can be easily recognized in the literature of practical medicine during the past year. And happy would it be, both for the profession and the public, if the return wave of thought, investigation, and practice, now fairly begun, could be so guided by a higher mental discipline, the adoption of more patient and complete methods of observation, and the adherence to a more rational induction, as to turn it steadily upward at the true meridian line, instead of allowing it to roll steadily on until it again breaks upon the reefs and shoals of its own excesses. But we see no good reason for hoping for such a result. On the contrary, evidences of the same tendency to extremes and hasty generalizations are as visible in the field of practice to-day as at any former period. Very recently attention was directed anew to the importance of noting the variations of temperature in disease, and straightway there appear diagrams marking the variations of temperature in the progress of diseases with as much apparent fixedness and certainty as the thermometric lines are drawn over the topographical map of a continent, and the practitioner looks upon his pocket thermometer as his chief instrument in diagnosis and prognosis. That *temperature*, if studied in close, careful connection with the coexisting indications of the state of nutrition, disintegration, and elimination, is of great importance in a clinical aspect, is certainly true. It was the subject of my inaugural thesis in January, 1837. It was again the subject of a careful series of investigations by me, more especially in its relations to certain kinds of food and drink, in 1850, the results of which were embodied in a paper read to this Association in May, 1851, and published in the *Northwestern Medical and Surgical Journal* for that year. Those investigations fully disclosed the important fact, that the temperature of the body varied from one degree to two degrees Fahrenheit with each ordinary meal, invariably rising during the active period of digestion and then gradually declining until the next ingestion of food, thereby establishing precisely the same facts that were again proved experimentally by Dr. C. E. Buckingham, of Boston, as published in the Boston *Medical and Surgical Journal* for January 1st, 1874. It was in the same paper read to this Association in 1851 that the first direct experimental proof was given of the power of alcohol when in the human system to directly reduce its temperature. That the temperature of a body is altered by every change in the arrangement of its molecules, being increased as those become

more compact or dense, and decreased as they are rarefied or rendered less dense, is a well-known law of physics. As a rule those processes by which new material is digested, assimilated and added to the tissues, evolve caloric or heat, while those by which the cells and atoms of the tissues are re-dissolved and eliminated through the skin, lungs, and kidneys, absorb or render the sensible heat latent and therefore reduce the temperature.

When these adverse processes balance each other, the ordinary standard of temperature is maintained, subject to such daily variations as accompany the active stages of digestion. Hence it is plain that a given degree of temperature in any stage of disease is a simple physical fact, the correct interpretation of which will depend entirely on the careful noting of the coincident state of the processes of ingestion and elimination. Just as the dulness elicited by percussion denotes the simple physical fact of increased density, while the question whether such density depends upon tubercular deposits, hepatization, or pleuritic effusion, will depend altogether upon the history of the case and the coincident facts. If we use our clinical thermometer for the same purpose that we use the instruments for percussion and auscultation, that is, for the establishment of a physical fact to be interpreted by a careful appreciation of preceding and accompanying phenomena, it will be of great value. But if we endeavor to make its markings into arbitrary rules to guide our practice, as has already been too hastily attempted, it will lead us into mischievous errors at every step. Another striking exemplification of the fact that our own day is as prolific of partial observations and hasty inferences as any that have gone by, is found in the application of the microscope to the study of etiology and pathology. Through its prolific revelations one army after another of poisonous germs are found preying upon the human race, until not only the air, earth, and water, but even the blood and the bowels literally swarm with them. From syphilis to cholera, and from thrush to cancer, we have little else than microscopic *germs* enumerated as essential causes of disease. Dr. A., in some part of Europe, announces that he has discovered in the dejections of cholera patients certain germs which, by diligent cultivation, multiply and develop rapidly, and a large part of the medical world at once leaps to the conclusion that these are the veritable causes of that dire disease; and instead of patiently extending observations to ascertain whether the same germs are not to be found in the serous discharges from

mucous surfaces in any form of disease, after exposure to atmospheric air, they immediately give loose rein to imagination for the purpose of explaining how these extraordinary germs, hatched on the banks of the Ganges, could be propagated and distributed around the globe.

For this purpose they are made to travel with caravans, sail on ships, ride on railroads, and when there is neither caravan, ship, railroad, nor canal, they are made to percolate through the soil, receiving reinforcements now and then from some luckless wight perambulating the country with *cholerine*, and dropping his dejections just in the right place to supply the needed link in the chain of connection. But just as we have our maps lithographed, our literature filled with satisfactory explanations, and our warehouses filled with materials for disinfecting the dreaded dejections, the tantalizing word comes from a thousand sources that the supposed cholera germs are not by any means peculiar to the dejections from that disease, but may be readily cultivated as a post-partem growth in any serous evacuation from the alimentary canal. From the tenor of these observations let no one infer that I undervalue the microscope as an aid in the study or investigation of medical topics. Its use has literally opened to us a wide and most important field of knowledge, and when rightly used is capable of adding much more. My object is simply to attract your attention to what has appeared to me the strongest barriers in the way of genuine progress both in the science and art of medicine, namely, incomplete observation of facts; deductions from inadequate premises; and the constant use of mere theoretical assumptions or suppositions as though they were demonstrated facts. It is the indulgence of these practices that actually keeps one half of the professional observers busy in correcting the errors and disproving the assumptions of the other half, and fills our literature with endless contradictions. Almost every problem connected with medicine is complex, requiring for its proper solution a careful observation of many elements, and their exact relations to each other. This is pre-eminently true of the problems involved in the study of etiology, or the causes of disease. To demonstrate the true relation of cause and effect in the origin and spread of diseases requires not only many observations concerning all the elements entering into the problem, but it requires these observations to be made coincidently in several distinct localities. And when the causation of epidemics is involved, the observations

should have preceded for a considerable time the actual appearance of the disease, and be continued a like period after it has ceased to prevail. Indeed, if we would make genuine and reliable progress in the study of the causes and modes of propagation of diseases of every kind, we must no longer depend on chance observations, individual enterprises, or irregular and temporary expedients, but we must devise a complete and permanent plan or system of observation, covering the whole country, rendering available all the aid to be afforded by chemistry, microscopy, meteorology and other branches of general physics, and pursue it with fidelity for a series of years. The appliances needed for such a work, even to the inclusion of atmospheric currents and terrestrial electricity, are available at the present day. What is needed, is, the wisely devised plan, the individual workers to man it, and the central executive power to maintain it in operation and cause the results to be annually gathered, carefully scrutinized, and communicated to the profession at large. And is not this national representative body exactly the central executive power that we need? Is not the Section on Practical Medicine, Materia Medica, and Physiology the place to devise the plan, to choose the workers, to designate the localities, and to annually gather in and digest the fruits? Many have asserted that the American Medical Association is a failure, and many are apparently looking anxiously for its early dissolution. But it has appeared to me that it has just reached the stage of development and the degree of perfection in its organization necessary for entering upon a career of prosperity and usefulness hitherto unknown in the history of scientific and professional organizations. With all ethical matters in the hands of a judicial council, with our strictly representative character improved, and the organizations of the sections more complete, we are really just prepared for efficient service in every department of the broad domain of medicine.

May we hope that during this session of the Association, every member will attach himself permanently to some one of the sections, choosing the one embracing departments of study most congenial to his own tastes and opportunities; and that each section, in addition to the hearing of reports and volunteer papers and discussing them, will carefully plan definite methods for investigating some important topic connected with each branch of medicine assigned to it.

Such a course, pursued from year to year, would rapidly diffuse a more philosophical spirit of investigation, check excesses and hasty generalizations, foster co-operation, uniformity, and persistence in researches, and give to this Association such a character as would rally to its support the earnest workers in the profession from all parts of the country; thereby rendering its existence not only perpetual, but also ever increasingly useful to the profession it represents and to the great family of man.

THE MANAGEMENT OF ECZEMA.

By L. DUNCAN BULKLEY, A.M., M.D.,
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Eczema being a disease which attacks all classes and conditions of persons, from the cradle to the grave, and one which, moreover, assumes a multitude of forms, and appears under very varied circumstances, it is evident that its treatment must vary greatly in different cases, while each stage through which most instances of the eruption must pass requires an alteration in the plan pursued, which again demands ofttimes a further modification owing to personal idiosyncrasies in the patient. For these reasons we have chosen as our topic, "The Management of Eczema," leaving pathology, etiology, etc., to occupy a place second in practical importance to the great question, "How can we cure eczema in the quickest and best manner?" Inasmuch, however, as all sound treatment is based on, and should presuppose a knowledge of the pathological changes of the disease to be treated, let us very briefly first touch upon the nosological relations of eczema and the alterations of tissue connected therewith as visible to the naked eye and through the microscope.

Our study of the disease and its treatment will be much simplified if, with modern pathologists, we look upon eczema as but a dermatitis, an inflammation of the skin, entirely analogous to inflammation as presented elsewhere in the human system. Eczema, however, differs from all other dermal inflammations, as erythema, erysipelas, herpes, acne, psoriasis, prurigo, and the like, in its exudative feature, in which it stands alone and resembles the catarrhal affections of the mucous membranes, whence certain writers call the disease a catarrhal inflammation of the skin, a comparison borne out by its clinical history as well as its pathological characters, and one which I wish to bring out very fully in our consideration of the subject before us. The stages of heat and dryness, subsequent tumefaction, and later free discharge

occurring in an ordinary mucous catarrh, all find their like in acute eczema, while the constant exudation and irritation of chronic mucous inflammation answer to certain chronic eczematous states.

The pathological conditions in eczema, as observed by Neumann, Biesiadecki, Rindfleish, and others, are as follows: When artificial dermatitis is produced, as by rubbing croton oil on the ear of a rabbit, a rhythmical contraction and relaxation of the capillaries is seen to take place, wherein the vessels at one moment appear to be empty of blood, and at the next greatly distended, which alternations continue until stasis occurs and the part, which before was transparent, becomes opaque, swollen, and hot. This congestion, thus occurring, relieves itself by an exudation of serum into and between the cells surrounding the bloodvessels, accompanied by an active proliferation of the cell elements of the skin, while the elongated connective-tissue cells, which Biesiadecki has shown to exist more or less abundantly between the cylindrical and polygonal cells of the *rete mucosum*, become swollen and seek to discharge their contents externally. If the epidermal layer is unbroken, this fluid, on reaching the surface, is retained in the form of vesicles, causing more or less œdema of the partsmean while; but if there is a solution of continuity, the discharge finds exit either through minute orifices which represent the natural pores or openings of the skin, where it is pierced by the sweat glands and hair follicles, the epidermal layer being thinnest there, or the fluid exudes from cracks in the epidermis, which may reach down even to the papillary layer.

In an eczema which has existed some time, chronic eczema, we have another element superadded, an element which is the result of the active process, and which now becomes the main object of our treatment, namely, the infiltration of the *rete mucosum* and papillary layer with new cells. Whether these cells result from a proliferation of connective-tissue or other cells, or are transuded white blood corpuscles, it does not come within the province of our paper to discuss. This infiltration, in certain instances, may extend through the whole structure of the derma and affect even the *panniculus adiposus* or loose fatty tissue beneath, whereby the well-known thickening of the skin results to such extent, at times, as to cause it to appear firmly attached to the subjacent parts. This thickening is seen, microscopically, in the enlarged papillæ, which become sometimes large enough to be recognized by the naked eye; also in the new cell growth around the capillaries and

in the walls between the single fat cells, and is recognized, clinically, by the increased thickness of a fold of diseased skin when pinched between the fingers, though sometimes the hyperplasia is so great that it is impossible thus to raise a fold of it. *While this thickening remains, the eczema is not cured, but will pretty certainly recur when treatment is suspended.*

The practical bearing which this pathological study has on the management of eczema is this: in the acute stage the disease is simply a catarrh of the skin, namely, a congestive condition of the cutaneous capillaries, resulting in an exudation of serous fluid, which seeks exit and must obtain it, and which manifests itself externally in vesicles, exudation, crusting or scaling, whereas in the chronic stage we have rather to do with the products of inflammation whose removal becomes our main object of endeavor. Here there is the first great division of eczema, which Hebra was one of the foremost to clearly mark out and insist on, and which is of the highest value in a scientific and satisfactory treatment of the disease. But although thus divisible into acute and chronic, there is no definite boundary line between the forms of eczema, nor is it possible to say exactly when the acute affection ceases and the chronic begins, and here it is that the *management* of eczema comes in, to determine just when soothing remedies are required, and when stimulating applications may be used with advantage, and it will be our task to endeavor to make this more clear.

Now while we have alluded to eczema as a dermatitis or inflammation of the skin, we must not be understood to signify that every dermatitis is an eczema. For besides the specific, well-defined inflammations of the skin, erythema, erysipelas, herpes, acne, psoriasis, prurigo, etc., we have traumatic dermatitis, also that arising from the action of heat and cold, likewise from animal and vegetable poisons of various kinds, giving rise to malignant pustule, to the peculiar eruptions following the use of arnica, those from the noxious influence of the rhus toxicodendron, from powered podophyllin, croton oil, savin, and tartar emetic, or, more unusual instances, where an aniline dye in cloth or irritating soap have induced superficial inflammations. These eruptions are not eczema, although often wrongly so called; nor is there any tendency for them to develop into eczema except in certain instances; for the cause ceasing to act, the parts soon regain their normal state after the results of the injury have been removed by absorption or

exfoliation, no catarrhal exudation or cellular infiltration accompanying or following.

But, as before stated, this is not the case always, for sometimes, starting from a most insignificant beginning, we will have an eczema manifest itself which baffles our best skill for a long period, while the same irritation in another person, or in the same individual at another time, causes but a transient dermal inflammation. As to the reason of this difference we can only say that there is some special influence, still unknown, whether inherent in deranged cell action, a congenital defect of development, or due to a "perverted innervation," or whether it is the exhibition of a blood crasis or diathesis, as the French school maintain, it is impossible as yet to state. The arguments for the diathetic view are very strong, as, the appearances of the skin in syphilis and the exanthemata, the alternation of certain cutaneous lesions with manifestations of gout, rheumatism, bronchitis, etc., where the blood and secretions are known to be disordered, the irritating nature of the discharges from the nose in some cases of catarrh, and the like, whereas the purely local pathology of deranged cell action appears to us to be supported only by the effects observed to follow external irritating applications. Now the whole force of the argument, derived from the production of artificial eczema, is destroyed by the fact before stated that the inflammation of the skin produced by croton oil, antimony, or, indeed, any irritating topical agency will, in a large majority of cases, tend to disappear as soon as the exciting causes are removed, while in the remaining minority of instances the local excitement serves as the starting point of a true eczema, that is, a catarrhal condition of the skin with little if any inclination to spontaneous recovery, and that only after running a certain course, and leaving behind it the alterations observed in chronic eczematous skin.

This difference, we hold, depends upon blood conditions as invariably and certainly as the serous and fibrous inflammations of gout and rheumatism depend upon the circulation of imperfectly elaborated blood, or the inflammatory and other conditions of the heart, lungs, and brain result from the presence of urea in the blood of patients suffering from kidney disease. Again, as arthritic, pulmonary, or cerebral symptoms appear to be the culmination of a blood process which we know as gout and rheumatism, so true eczema is directly dependent upon somewhat similar although as yet but little defined, blood change, while the local

alterations remaining after an acute attack but correspond to the gouty concretions on and in the synovial membranes and the rheumatic thickening left around joints long inflamed; and further, as rheumatic and gouty symptoms are in a measure self-limited acute attacks, after which the health appears excellent, better perhaps than before, so eczema, the catarrhal affection, is in a measure a self-limited acute manifestation of systemic disorder, with the same tendency to recur again and again, the health in the mean time being perfect, while the product of the disease, the cell infiltration, remains.

The success of local treatment militates nothing against this view, for the acute form is now widely recognized as running a definite course through certain stages, which can as seldom be aborted as can gout or rheumatism, and which can only be modified and relieved by soothing treatment, while the tissue changes left afterwards, which in their turn keep up congestion and serous exudation, are local affairs, and therefore amenable to powerful local stimulants and such agents as induce absorption.

What the local pathology is which determines that at one time one portion of the body shall be attacked and at another time another, cannot be determined in every instance, although very frequently, local causes are found to exist. That there is engrafted on a part that has been once affected a tendency to the recurrence of the same form of alteration, resulting in eczema, seems probable, inasmuch as we observe the same part again and again affected; and also from what we know of the repetition of other forms of disease time and again in other organs and tissues. Were it granted that local treatment really cured the disease, eczema, it would still be explainable on the ground that the topical measures overcame the particular local debility of tissue, or counteracted the injurious effect of the agency which caused the development of the constitutional inflammatory process at that particular spot, by restoring tone to the weakened cells, bloodvessels, or nerves, whichever future pathology shall demonstrate to be at fault in eczema.

With this glance at the histological pathology and nature of eczema, let us turn to consider a little more closely their bearing upon the management of the disease. Acute artificial eczema, such as results from heat, mechanical or chemical irritants, water, sugar, lime, flour, and the like, requires but a removal of the cause, protection from these and other injurious agencies, and the requi-

site time for the engorged vessels to discharge their serum, this to make its way to the surface, and the damage done to the outer layers to be replaced by a natural reproduction of the epidermis—a most simple treatment. A very striking example of this is seen in scabies. Were it possible to remove with a needle each acarus and its eggs, the itching would cease, and in from three to ten days most patients would be well—remembering, of course, the minority in whom the artificial irritation once started might be provocative of true eczematous disease. As it is, we cure the itch by applying some agent which destroys the animal and its larvæ in the burrows, as balsam of Peru, storax, sulphur, carbolic acid, and the like, and the eczematous papules, vesicles, and pustules which compose the eruption soon disappear, if perchance our applications have not excited further trouble. Take, again, the washerwoman's eczema of the hands; restrain her from immersing them in water, and in many instances they get well of themselves; kill the pediculi in phthiriasis capitis, and the accompanying eczema soon vanishes; croton oil and tartar emetic eruptions require but the suspension of the irritating applications, and a few days suffice to restore healthy cuticle; eczema of the hands and face from sunburn is, in most cases, a very temporary affair requiring no treatment. But still all these cases demand *management;* it is necessary the wrong thing should *not* be done, that irritating agencies should be kept away. Take, now, any one of the instances cited, place coarse flannel next an eruption following the friction with croton oil or a blistered surface, and the time of healing is prolonged, it may be indefinitely; or worse, apply a strong mercurial or resin ointment or even a harmless salve which has become rancid, and what results? The simple, superficial dermatitis is increased and prolonged, as a consequence cell infiltration of deeper parts must follow the protracted capillary congestion, and you have dermatitis of greater intensity and extent—call it eczema if you like, it resembles it closely—and that spot cannot heal until the new deposit of unneeded cells and serum is absorbed.

Now, as there are great diversities of temperaments, constitutions, etc., so we find many skins so delicate that very slight external impressions suffice to produce great changes; and two elements almost constantly present are found to have very great influence in prolonging and aggravating most cases of eczema, artificial or constitutional, we refer to atmospheric air and water. Another very important element in the production and continua-

tion of eczema, and one which must be removed at all hazards, although often it seems impossible, is scratching, for the diseased skin can never fully recover while repeatedly irritated in this way.

Our first care, therefore, when brought to face an eczema, is to remove irritating agents, or, if they are employed therapeutically, to so limit and control their action that only the desired stimulation shall be afforded. To exclude air and water and to secure a bland, non-irritating covering for the inflamed surface, we are in the habit of using four classes of applications, namely, dusting powders, medicated lotions, ointments, and flexible collodion (I have not mentioned poultices, for I have rarely if ever ordered them for eczema, and then only to remove crusts, and I have moreover seen untold injury follow their misuse by others). If we can fulfil other indications while we make these mild coverings, we of course gain, and this we may attempt to do by combining some of the sedative and gently stimulant remedies with our dressings. Thus in powders we add a trifle of morphine or camphor to allay the itching, a small portion of oxide of zinc or bismuth as a local stimulant, with considerable powdered starch or lycopodium dust. These must be very finely powdered, and here let me emphasize as forcibly as possible the absolute necessity of having any solid substance which is to come into contact with the inflamed skin, whether in powder, lotion, or ointment, reduced to as nearly an impalpable powder as possible. Very much harm is constantly done to irritable skins by the coarse, gritty substances incorporated into various outward applications, and that through a culpable carelessness on the part of druggists. To have success in treating skin cases it is indispensable to see to this personally; and, lest a better occasion should not offer, I wish to add a word with reference to another pharmaceutical aspect of the management of eczema, which I have before hinted at, and that is, the very irritating nature of ointments which have become at all rancid, for I firmly believe that a large share of our want of success in handling these cases is due to some failure in the ultimate employment of the means suggested, rather than to any fault in the advice given, as is shown in the very great success attending local treatment in skin hospitals, where not only the patients but also the drugs and their immediate application are directly under the eye of the physician. To this end, I generally insist that my prescriptions

shall be taken to one of three or four druggists whom I constantly watch.

To return: *lotions* are very well suited to the acute stage of eczema, and of these, among the best are such as on evaporating leave some finely divided powder on the part, and the one I most commonly use resembles those employed by the English, and consists of from ʒij to ʒiv of finely levigated calamine, a somewhat less quantity of oxide of zinc, two drachms of glycerin, one of the alkaline solution of tar (to be described further on), and four ounces rose-water. In the erythematous stage, when the skin is unbroken, we may use dilute hydrocyanic acid with bismuth, and the like. I will not stop to enumerate the washes applicable to different cases in which the text-books abound, as we are considering rather the principles of the management of eczema, and a few of the remedies I have found most serviceable are introduced only by way of illustration. I will merely add that it is better always to use distilled water in forming lotions, or the rose, cherry-laurel, or orange-flower water, which, in addition to being distilled, possess an agreeable odor.

When exudation has more or less ceased, and the skin is hot and irritable, liquid preparations are less agreeable, and *ointments* are called for. These act in many instances quite as much by excluding the air and preventing evaporation as by virtue of any medications they may contain. The simplest of these greasy applications is cod-liver oil, which administered internally and kept continuously on the skin suffice to cure many cases of acute or subacute eczema, especially where there is more or less marked tendency to pus formation. Almost any kind of fatty matter which is without irritating properties serves to form the artificial covering required for the abraded surfaces of eczema. I have employed quite largely simple mutton suet mingled with a greater or less quantity of fresh lard so as to render it soft and pliable, anointing the surface therewith after the use of some wash, as the alkaline tar diluted considerably.

The most widely-known and used ointment is undoubtedly that of oxide of zinc, a drachm to the ounce of lard, or modified, as Wilson advises, by adding benzoin to prevent rancidity. This latter end may be accomplished equally well and far more agreeably by employing the rose ointment in place of the lard and benzoin, and I have often found the zinc ointment thus made very soothing, when the benzoated preparation had proved highly irri-

tating; cucumber ointment forms a very pleasant and bland excipient as well; also the glycerin and starch combination recently introduced into our Pharmacopœia. Hebra's famous diachylon ointment has not proved as serviceable in our hands as we had hoped to find it after witnessing the excellent results obtained with it at Vienna; it must be reckoned, however, as among our best local applications for affording a non-irritating covering to the inflamed and exuding skin. Finally, the flexible collodion painted over small spots of dry subacute eczema answers very well to afford a covering impervious to air and water, beneath which healing will often take place rapidly and satisfactorily. The application is painful if the surface is at all raw or cracked, and if there is any exudation it very quickly forces off the coating.

Quite other is the local treatment of *chronic eczema*, where, as before stated, we have the products of disease and a local, morbid cell-action to deal with, rather than the disease itself. Hebra, observing that when there is free secretion from the surface the itching of eczema is very much diminished, makes a bold dash in the way of treatment, and applies such agents and in such a manner as to remove at once the imperfectly formed epithelial layers (which would be thrown off sooner or later), thus giving vent to the pent-up exudation, and stimulating the skin so violently as really to induce acute disease. For this purpose he employs energetic frictions with soft potassa soap by means of stiff brushes upon eczematous legs to such a point as to cause the foam produced with water to be red with blood, as I have repeatedly witnessed; and upon the raw surface thus occasioned, the diachylon ointment is laid, spread upon linen, and the process is repeated at the end of twenty-four hours. In certain thickened eczemas, especially of the scrotum, Hebra also applies a poultice of the same green soap, with the effect of completely dissolving and removing the outer layers of the skin and producing free exudation from its surface. He further employs very strong solutions of caustic potassa, even up to equal parts with water by weight, which are well rubbed on infiltrated patches, certainly to the great relief of the itching and removal of the thickening.

Now my experience is, that American skins will not stand these very harsh applications; nor will our patients submit to such painful treatment, requiring ofttimes confinement to the bed, and generally a cessation of occupation for diseases which affect their comfort and pleasure only, and do not endanger life; and, finally, I find

that the same ends may be accomplished by other means. These severe remedies, moreover, cannot be employed with impunity, even by Hebra himself. I recall perfectly a case occurring in the out-door clinic, where a young girl about 18 years of age applied for the treatment of a small patch of subacute eczema on the back of one of her hands. Hebra had just been manipulating another patient with a very strong solution of potassa, and he rubbed the brush in his hand over the patch, intimating, as she left, that it might cause trouble if it did not cure. In a few days the patient presented herself for admission to the hospital with the whole hand swollen and painful; the entire arm was soon involved in a very severe suppurative eczema, which spread somewhat on to the body and was accompanied with a very high fever, so that one day her life was in danger. She was in the hospital some time, and all this from the injudicious use of caustics, and that in the hands of Hebra. Surely others have need of caution.

Great thanks, however, are due to the German School for the development of local pathology and the local treatment of many skin diseases, and especially, in our present connection, for the introduction of the local use of potassa and tarry preparations for relieving itching and reducing thickening of the skin, which, when judiciously employed, are of great service to the dermatologist. Hebra's justly famous "compound tincture of green soap," containing equal parts of sapo-viridis, tar or oil of cade, and alcohol, is very valuable and has long been employed in the more chronic forms of eczema. But the alcohol is an insurmountable obstacle to its use on many skins, and when diluted with water it forms only an emulsion, depositing on standing, and does not, therefore, present the component parts in a truly soluble state, and furthermore, it is not readily removed from the skin and clothing.

For these reasons we have striven to introduce into general notice the "*liquor picis alkalinus*," which we presented to the profession some time ago at a meeting of the New York Dermatological Society, and subsequently published in the *Archives of Scientific and Practical Medicine* for February of last year, and which we have employed daily since that time with increasing confidence. In this the tar is made to combine with water by means of caustic potassa, after the formula:—

℞.—Picis liquidæ, f℥ij.
Potassæ causticæ, ℥j.
Aquæ destillatæ, f℥v.—M.

Ft. "liquor picis alkalinus." To be used diluted.

The stick potassa is to be dissolved in the water and gradually added to the tar with rubbing in a mortar.

Few remedies that we know of possess greater value in relieving itching and diminishing thickening of the skin than the above, and its readiness of dilution renders it capable of being used in varying strength in almost all the varieties of eczema. Thus in acute forms, diluted one part to twelve or sixteen or more of water, it may be kept applied constantly during the day, or, sponged lightly over the parts affected which are then to be quickly covered with some mild salve, it serves the purpose admirably of removing the secretions, dead epithelial matter, and old ointment, relieving greatly the burning and itching, and promoting the absorption of any adventitious cell elements which may have formed. In less acute cases, where there is scaling, as in dry red eczema of the head, face, and hands, a stronger solution, say one part in five or ten of water, rubbed in and followed by tannin ointment ʒj ad ℥j, often removes the disease very quickly. When describing the effect of external treatment as so satisfactory, we imply that either the lesion is either a wholly local affair, a dermatitis rather than a true eczema, or that constitutional treatment, to be mentioned hereafter, is assisting, or that the catarrhal disease, eczema, is past, and we have only its result, the cell infiltration or the abnormal cell-tendency, which tends to perpetuate and spread the disease after the same pathological law which is observed in neoplastic formations.

When more stimulating measures are required, the same alkaline tar may be used in greater strength, thus, mingled with equal parts of water or undiluted, and I have even added double the amount of potassa, causing it to be greatly in excess, but this only in very rare instances. It is well to remember that in the formula given, the caustic potassa in an ounce is twice the amount found in the officinal liquor potassæ, and I would advise it to be diluted considerably when first employed. I have, however, known long-standing moist eczema of the leg to be cured by a very few energetic frictions of the full strength of the above solution—such heroic measures I seldom attempt.

Ofttimes we will succeed better by combining this alkaline tar directly with an ointment, say ʒj vel ʒij ad ℥j, directing it to be

rubbed into the affected part quite firmly; this may be rendered still more efficient by the addition of from one to three drachms of the officinal citrine, white precipitate, red oxide of mercury, sulphur, or other active ointment, to the ounce.

We must not omit to mention that very old infiltrations yield only to still more severe means, as the application of blisters, the cantharidal collodion or acetum cantharidis, or very strong solutions of nitrate of silver or caustic potassa.

Between these extremes of real acute and thoroughly chronic eczema there are a host of varieties and forms, each case perhaps of fifty, appearing in succession, presenting features quite unlike the others, and requiring some modification of the plans above suggested. Having described, then, the limits of local treatment in both directions of severity and leniency, we will enter upon the subject of internal medication and hygienic management, mentioning only that baths are often of great service in all the forms of eczema; but as pure water is irritating to most eczematous skins, they must be modified by the addition of alkalies, as carbonate of potassa and soda, with starch or glycerin.

I have described the local measures first, not because I regard them of greatest importance, but for exactly the contrary reason, namely, because I would impress the fact that their effects are but local and in a great measure temporary, whereas true eczema is a constitutional affair of which the appearances on the skin are but the outcroppings; and while we must be able to handle well these topical remedies to insure present relief, to assist internal medicine in breaking up the local dyscrasia, and to prevent the patient and friends from applying what will be actually injurious, it is absolutely necessary to institute other measures addressed to the system at large if we would be really successful in managing eczema and checking or modifying its recurrence.

When the internal treatment of eczema is spoken of, arsenic at once occurs to most minds, and to read what some have written in its favor one is led to form very high estimates of the all-curative power of this drug. But daily experience proves that arsenic, although playing an important part at times in cutaneous therapeusis, is not a specific for eczema, nor indeed can we reasonably look for any one remedy to cure so polymorphous a disease. The analogy between the use of arsenic in this affection and mercury and iodide of potassium for the ever varying syphilides does not

hold, for the latter are the result of a specific external poison, and, moreover, clinical experience is for the one and against the other.

The constitutional treatment of eczema covers a wide field, and naturally divides itself under three heads: Dietetic, Hygienic, and Medicinal, each and all very important.

1st. *Dietetic.* Not unfrequently, infantile eczema is caused and kept up by improper indulgences, or by a poor or improper condition of the milk, or by too frequent or irregular feeding; and the addition of a little cream or perhaps extract of meat, together with the abstaining from farinaceous compounds usually given, or the obtaining of suitable, nourishing milk and regulating its administration, will sometimes be quite sufficient to remove the disease. The same is true of adults; dyspepsia, caused by wrong eating, drinking, and living, aggravates all skin diseases, and its removal alone renders many cases of eczema curable. In acute or subacute eczema, covering a large surface, a hearty meat diet increases the trouble, while stimulants, which I have repeatedly found patients taking, but add fuel to the flame.

2d. *Hygienic* measures are essential; fresh air, exercise, and bathing, together with the avoidance of fatigue, will prevent the recurrence of many cases of eczema, and in certain instances will assist in its cure.

3d. *Medicines* are called for in a large share of the cases of eczema, because there is some constitutional derangement in a great majority of the patients with this disease; for, except in the case of purely local dermatitis, resulting from direct violence, chemical, mechanical, etc., we may be sure that disease cannot fix itself upon a perfectly healthy organism, but its presence there is an evidence of debility.

Internal medication, then, will be demanded to meet several different requirements, and may be spoken of under as many different heads; thus, Cathartics, Diuretics, Alkalies, Tonics, and Sedatives. *Cathartics* are very serviceable on entering a course of treatment, in clearing the *primæ viæ*, and need to be repeated from time to time; their abuse, however, particularly of those at all drastic or exhausting, directly increases the cutaneous irritation. In infants, calomel or gray powder is frequently required, especially when pulmonary or intestinal troubles threaten. *Diuretics* are positively demanded in a goodly proportion of cases, because the kidney action is very frequently found to be defective and extra work is thrown upon the skin, or the cutaneous capillaries are

irritated by the circulation through them of effete products. With diuretics we will speak also of *alkalies*, for most of those administered have more or less action upon the kidneys, and their necessity is indicated more especially by a hyper-acidity of the urine with crystalline deposits.

The recognition of this acidity and its proper management we consider of the utmost importance in the treatment of eczema. Our observations on the urine of eczematous patients, which have been quite extended, have more than confirmed all that others have said on this subject, and we have found that secretion more acid than normal in almost every one thus affected who was not under the influence of medicine, while free uric acid is not at all uncommon, together with the amorphous urates. Many of the patients have an acid dyspepsia; in infants the substances ejected from the stomach are intensely acid, while the fecal evacuations, as well as the urine, scald and irritate the parts with which they come in contact. Rational management suggests counteracting this acidity, and this in my hands has furnished the best results. This may be accomplished in three ways—*first*, by directly removing an amount of it, either by emptying the stomach at the time when it contains the greatest amount of acid, that is, during digestion (the almost universal vomiting of infants with eczema being probably an effort of nature in this direction), or by increasing the activity of the natural emunctories, the skin, kidneys, and bowels, whereby acid is thrown off, its place in the economy being supplied from food and drink with ingredients containing less acid principle; *second*, by checking the supply generated, by cutting off such articles of diet as are prone to undergo acid fermentation, and also by administering such remedies as tend to promote oxidation and so carry through the systemic processes to their normal end, a failure in which, or sub-oxidation as it is called, results in acid formation; and, *thirdly*, by giving such agents as chemically neutralize the acid present. These ends are attained oftentimes medically by the use of some of the mineral waters, especially when taken at the springs, and first among those artificially prepared we would place Kissingen water, taken repeatedly a pint before breakfast. In infants we administer lime, Vichy, or magnesia water to the same end, while acetate, bitartrate, and citrate of potassa, sulphate and carbonate of magnesia, carbonate and solution of acetate of ammonia, sweet spirits of nitre, together with liquor potassæ, and bi-

carbonate of soda in combination with rhubarb, are precious remedies to those who have tried their value.

Of no less service, when rightly used, are *tonics*, and the list from which we make daily selections is not large: quinine, strychnine, iron—of which the ammonio-citrate, sulphate, pyrophosphate, tincture of the chloride, syrup of the iodide, and sweet wine of iron are the most common—arsenic, the mineral acids, the vegetable bitters, as cinchona, gentian, columbo, quassia, and colchicum for the gouty, and cod-liver oil. It will be seen that arsenic occupies but a single place in this list, and it is to this fact that I would direct special attention. I feel confident that others who see much of skin diseases will bear me out in the assertion that arsenic has been very much overrated in its power over cutaneous affections, and I am free to confess that I prescribe it but seldom and rarely alone, for the reason that most of the patients have been through a course of the drug before being referred to me. That it greatly assists at times I cannot deny, and I believe it gives permanency to the cure in some cases if continued long enough. I can discover but two ways in which it can act, and both of them through the agency of the nervous system, as we must believe from its beneficial effect in nervous disorders and malaria. First, then, arsenic acts as a nerve tonic in the highest sense of the term by giving tone to the nerves which preside over the elaboration of the blood, thereby regulating and controlling all morbid changes, as hyperacidity, etc.; and, second, it assists in removing infiltrated cells and serum by a direct stimulation to the capillary circulation, causing their absorption, which quickening of capillary action is seen in psoriasis and lupus, where the first sign of improvement is reddening of the base.

One agent of very great value in many cases of eczema, and the use of which experience confidently recommends, in selected cases, is cod-liver oil. Although Hebra expressly states "that its internal employment is without any effect upon eczematous disease," many will agree with me unquestionably that its effect is magical, and that as a single remedy it approaches nearer to being a specific for the proper cases of eczema than any other we possess. Tilbury Fox has called special attention to the variety where the pus-formation of the impetiginous form is far greater than can be accounted for by the intensity of the inflammation present; these cases often yield to it alone. Also where there is the thin, transparent skin and light hair of the scrofulous, or the thick, doughy,

flabby skin of the lymphatic, as also whenever there appears to be a mal-nutrition, a starving of the system for oily matter, as in infants whose mother's milk is poor, or in those of older years compelled to ill nourishment, cod-liver oil supplies the lack and is indispensable to success. And not only among the poor, but even in children who, born amid the luxuries of high life, have had every care, mother's milk or that of a healthy wet nurse, well ventilated apartments, perfect cleanliness, and the most careful protection against atmospheric influences—even in these, I have repeatedly seen cod-liver oil yield the best results when other treatment had failed to check the disease, showing how careful we need be in examining for constitutional failings. Now the effect of the cod-liver oil in these cases upon the local lesion is not to be attributed to any specific power—no more is that of arsenic—but to the fact that the system is so far below *par*, perhaps because it fails in the one element which the oil supplies, that reparation cannot take place, even as bones fail to unite, ulcers of the cornea refuse to heal, and neuralgias persist as long as debility remains, in spite of the best local measures.

Our last class of internal remedies, *sedatives*, embrace opium or morphine, chloral, bromide of potassium and ammonium, tar, and carbolic acid. Chloral is very serviceable in procuring rest at night in bad cases of eczema, and as it acts directly by relieving the itching the patients do not scratch during sleep; I frequently give it in small doses during the day, also a medium dose half an hour before undressing, to prevent the intolerable distress caused sometimes on exposing the skin to the irritation of removing the clothes and to the cool air. Bromide of potassium and ammonium I have found to act pleasantly, in the same manner, alone or combined with chloral. Tar and carbolic acid internally also relieve the itching and benefit eczema more or less.

I am quite prepared for the objection, that, in all this constitutional management we have detailed, we are doing nothing more than might be required were no eczema present, that is, restoring the system to a healthy tone, meeting the various disorders of constipation, dyspepsia, acidity, imperfect action of the kidneys, and debility. True; and I would even add to the list female disorders, when they are present, for they may, by reflex action, render an eczema incurable. And this is precisely what I wish to impress in this paper, and which I have urged publicly on other occasions, namely, that to cure eczema or any cutaneous difficulty

we must first make a correct diagnosis and then discover the cause and remove it as far as possible, and that a large proportion of the cases ordinarily met with are amenable to simple measures if correctly applied. Blind empiricism may occasionally be followed by cure, but successful scientific practice in any branch must be based on sound pathological knowledge and penetrating medical observation.

The local management presents at times some difficulty, as all must confess, but remembering well the acutely irritable nature of most skins, which take on eczematous inflammation with very slight provocation, and yet again that in most cases attention to the constitutional measures suggested is necessary, we will be less liable to do violence to nature, and to hinder the attempts she is making toward repairing the injury.

I have by no means exhausted the subject, and have left unsaid much that I had hoped to give in illustration of the application of these principles to individual forms of eczema, but time forbids my entering more in detail upon this very interesting and highly practical matter of the management of this protean disease. I trust, however, that in what has been said I have made clear the following points:—

I. True eczema is a catarrh of the skin, properly acute but very commonly subacute and chronic, and is entirely analogous to catarrh of the mucous membranes, which are, indeed, but involuted portions of the cutaneous envelope. The absence of moisture, in many cases, does not disprove this, for if the dry parts are kept covered with oiled silk or gutta-percha paper or rubber to prevent rapid evaporation, we soon find that the material forming the scales is the same as in other cases, catarrhal, which stiffens linen.

II. This catarrh tends to run a certain course, accompanied by definite pathological changes, and the disease which we meet with more commonly is, in a large part, made up of the relics left in the skin—that is, thickening caused by a deposit of adventitious cells, mostly in the *rete mucosum*, but also capable of extending into the papillary layer, the derma, and even deep into the adipose tissue.

III. Much that is called eczema is properly only a dermatitis or ordinary inflammation of the skin, tending to spontaneous recovery when the cause is removed and irritating agencies kept away.

IV. Eczema in its true sense is not a local affair, but one intimately associated with blood changes, represented in the main by a sub-oxidation or hyperacidity, as found in the stomach, kidney,

etc., and this state, moreover, is closely allied to gout, rheumatism and scrofula.

V. Debility, pure and simple, does not cause eczema, but may, by its existence, prevent either the recuperative action of nature or the beneficial effect of remedies.

VI. Eczema being an acute disease, running a definite course, our treatment must consist principally in avoiding irritating elements, correcting systemic errors, debility, acidity, etc., favoring the action of the emunctories, and locally making such applications as soothe and restore tone to an irritated and inflamed integument.

VII. The products of eczema, the thickening and consequent scaling and itching, are removed by stimulating applications, and by such pure tonics as act directly on the nerves, causing absorption through the capillaries, as quinine, iron, arsenic, strychnine, and the like.

VIII. Arsenic and zinc ointment, while serviceable in many instances, are so far from being specifics for eczema that their use is injurious in many cases, while almost always other remedies will either suffice alone or greatly assist their action.

REPORT OF THE COMMITTEE ON THE CULTIVATION OF THE CINCHONA TREE IN THE UNITED STATES.

By LEMUEL J. DEAL, M.D.,
OF PHILADELPHIA.

On behalf of the Committee appointed by the Association to report on the Cultivation of the Cinchona Tree in the United States, its chairman would respectfully report progress. The undersigned was appointed chairman of this committee in 1868, six years ago; since which time three memorials have been presented to Congress. The last was presented at the present session by Mr. Scott, of Pennsylvania, in the Senate, and by Mr. Kelley, of Pennsylvania, in the House.

Increased interest is manifested in the matter by our representatives in our national legislature. Mr. Kelley writes me, "I am glad that the American Medical Association is pushing this matter," and while he adds that he cannot assure me of speedy help by Congress in the matter, yet intimates that the continual pushing of the matter will probably result in success. Mr. Myers, in private conversation, promised his aid, and expressed much interest in the matter.

Acting on the suggestions of Mr. Kelley, correspondence has been opened with the Superintendent of the Botanical Gardens at Washington; these gardens being entirely distinct from the Agricultural Department. The Commissioner of the Department of Agriculture has been for several years ready to aid in any possible manner, even to furnishing seeds for private experiment. Communication has also been had with the Chairman of the Centennial Committee of the Horticultural Society, with a view of presenting growing plants of the cinchona species at the exhibition in 1876.

President Grant, in his message relative to the purchase of San

Domingo, urged the argument that there could be found a climate and soil adapted to the cultivation of the cinchona.

Your Committee would respectfully ask that they be continued, and that their applications to Congress be endorsed by resolution of the Association.

TOXÆMIC EFFECTS OF UREA.

By F. R. BUCKHAM, M.D.,
OF MICHIGAN.

In presenting my views on the toxæmic effects of urea in the system, I do so with considerable hesitancy; not because I doubt the correctness of my conclusions, but because the facts, as I have observed them, and the conclusions therefrom deduced, differ from, and to some extent are antagonistic to, the teaching of those whom we delight to honor as authorities, whose dicta we have been in the habit of receiving unquestionably, and whose admirable treatises appeared to have left nothing more to be discovered in the premises.

On the toxæmic effects of uræmia in morbus Brightii or uræmic eclampsia, I have nothing to add to the exhaustive writings of Bright, Braun, Duncan, Simpson, Churchill, Golding Bird, et al.; nor do I at present intend to offer any remarks on the etiology or *modus operandi* of uræmia, whether its morbid effects are produced by it as urea, or as a carbonate of ammonia generated by the decomposition of urea, as taught by Frerichs, Duncan, Bernard, Tyler, Smith, et al.: but I do take issue with the teachings of any authority, however celebrated, when such authority states directly or by implication that uræmia is an effect, a product, or sequela of albuminuria; as I am quite convinced, and hope to indicate a course of investigation which will demonstrate, that uræmia can exist and does exist independently of albuminuria, without the destruction of a single tubulus uriniferus, without a trace of albumen in the urine, and without any evidence of disease of the kidney whatever, and that, consequently, when the two conditions are found together they simply coexist, and that a much greater number suffer from uræmia who have neither Bright's disease nor uræmic eclampsia than are to be found who have either or both of those diseases.

My attention was first called particularly to the subject while attending a patient suffering from albuminuria, of which he died about four weeks afterwards. And while my mind was more

actively directed to that disease while making daily observations of it, I was called some distance to see a very dear personal friend, and found the symptoms of his case to correspond so exactly with those of my albuminous patient, that I told my friend I feared he had Bright's disease of the kidney, in which opinion his attending physician concurred, but declined to give a pronounced opinion until after making an analysis of his urine, which had not been done, but which I would do immediately on my return home and report the result to his physician. Much to my astonishment, on examination, not a trace of albumen nor a tube cast was to be found, nor any pus or anything else to indicate organic lesion of the kidneys. I had commenced the quantitative analysis for urea before testing for albumen, and completed the investigation, I believe, simply because I had commenced it; otherwise I would probably have done as I had often done before, and as many have done since, *id est*, concluded, according to authority, that, as there were neither tube-casts nor albumen, *ergo* there could be no uræmia; but, much to my surprise, I found less urea in my friend's urine than in that of my albuminuria patient, of which I made an analysis at the same time. Both my diagnosis from the symptoms, and the abnormally small quantity of urea (3.7 grains to the ounce) without albuminuria or indications of any disease of the kidneys, were so contrary to my expectations from the examination, that I repeated the analysis in different ways to guard against the possibility of error, and always with the same result. I then determined to pursue the investigation of the subject as I should have opportunity afforded, and since that time, some six years ago, I have made between 700 and 800 quantitative analyses for urea, fully demonstrating to me that uræmia does exist, not alone in the comparatively few cases of Bright's disease and eclampsia, but in many of our every-day diseases, exerting its baneful influence, and that where there is no disease of the kidneys whatever; and if any gentleman doubts the correctness of my conclusions, I have only to ask him to make analyses in every case where he finds the patient exhibiting symptoms similar to those described as indicating albuminuria or eclampsia, and I venture to say, that, long before he shall have expended half the time or taken half the trouble that I have done, he will arrive at the same conclusion.

Whether the albuminuria can exist for any considerable length of time without inducing uræmia I am not prepared on my own observation to say, because I have had comparatively few cases

under my care, but I should think not, as, when the kidney is diseased, *pari passu*, its power as an eliminant must be decreased in proportion to the extent of the disease; hence a relative proportion of morbid material that ought to be eliminated will remain in the system, excepting the compensation by increased activity of the remaining healthy tissue of those organs. Granting that uræmia is always present in the advanced, or, indeed, in any stage of albuminuria, it does not follow that it must be a sequela or effect of that disease; by a parity of reasoning the inverse would be the more probable, as, while uræmia is always believed to be present where albuminuria exists, I have demonstrated (to my own satisfaction at least) that uræmia is often found without albuminuria, and hence—unless on the supposition that the conclusion may be greater than the premises, a logical absurdity—uræmia cannot be the product of albuminuria.

While, however, they coexist in albuminuria, may not uræmia exist in every case prior to albuminuria? May not uræmia, exerting its baneful influence on the nervous, and through the nervous, on the sanguineous and digestive systems, loading the blood unduly with morbid matter, lessening the quantity of pure blood, and consequently decreasing or impeding the reparative process of disorganizing tissue, and still further loading the circulation with effete material, requiring a superexalted activity of the kidneys—may not the exhaustion from the long-continued, largely-increased labor, with the decreased reparative power, be the inducing cause of the ultimate diseased condition of the kidneys—albuminuria? I simply call attention to the subject as worthy the careful observation of those who have cases of that opprobria medicamenta in their charge, and if the uræmia should be found to be considerable and the albumen little, I would recommend to reverse the recognized order of treatment, directing remedies for uræmia, with the hope that, by correcting that toxæmic condition, the disease of the kidney might be arrested and ultimately cured.

What is urea, and whence its source? It is a hydrated cyanate of ammonia, "the principal product of the metamorphosis in the body of nitrogenized food" (I quote Golding Bird)—"the destructive assimilation of the tissues of the body." "That urea is one of the products of this important process—that it constitutes the mode in which the greater portion of the nitrogenized elements are excreted, is unquestionable;" hence the generation of urea is continuous, in sickness or health, sleeping or waking, the "destruc-

tive assimilation" continues, and, therefore, unless eliminated and excreted, there must be excess of urea in the system.

"It is well known that our bodies are always in a kind of transition state; that during each moment of our existence every atom of the frame is undergoing some change or other; the old matter is absorbed and drawn off at one or other of the excreting outlets of the body, and new matter is deposited from the blood to supply its place. The old and effete atoms of the animal structure are not excreted in the form of dead tissue, but, becoming liquefied, they re-enter the circulation, their elements being rearranged; one series of combinations thus produced, rich in nitrogen, is excreted by the kidneys, whilst those products which contain a preponderance of the inflammable elements, carbon, sulphur, and hydrogen, are called upon to perform, chiefly through the medium of the liver, an important office previous to their final elimination from the system. Thus the blood is not only the source of the elements derived from the food which serve for the nutrition of the body, but it also seems, like a sewer, to receive the matter arising from the waste and liquefaction of the old and exhausted tissues."

That the kidneys are the chief eliminants of the blood will hardly be denied by any, nor that the most important part of their labor is carrying off the urea, hence the name of the general product—urine, nor that the urine is derived "from three several sources, each acting alike in preserving the equilibrium of the delicately adjusted balance of the secreting and depurating functions of the body. The effects of copious aqueous potations in producing a free discharge of pale urine, at once indicates one source of the great bulk of the urinary secretion, and demonstrates one of the most important functions of the kidneys, in their pumping off any excess of fluid which may enter the circulation. A second great duty of these organs is shown in the physical and chemical characters of their secretion after the digestion of good food is completed," *e. g.*, the smell after having eaten asparagus or rhubarb, or the copious elimination of oxalic acid after a meal in some cases of irritative dyspepsia.

"It is, indeed, a general law, that any substance which has entered the circulating mass, and not being required for the nutrition of the body, nor forming a normal element of healthy blood, always escapes from the system by the kidneys, provided it exists in a state of complete solution. Hence these most important emunctories have the duty of removing any imperfectly assimi-

lated elements of the food which have been absorbed while traversing the small intestines, and entered the circulating mass, as well as excreting the often noxious results of unhealthy or partial digestion.

"To effect these most important conditions, it is essential that the substance to be removed should be soluble, or, at least, capable of being readily metamorphosed into a body soluble in the water of the urine; as nothing can be excreted from the kidneys, without breach of surface, unless in a state of solution. The third function performed by the kidneys is their serving as outlets, to evolve from the animal organism those elements of the disorganization of the tissues which cannot perform any ulterior process in the economy, nor be got rid of by the lungs or skin. The disorganization of tissues here alluded to is a necessary result of the conditions for the growth and reparation of the body. It must not, however, be supposed that the urea is normally derived *directly* from the food. It must, in its origin, be traced to the destructive assimilation of those tissues of the body which are removed to make room for new matter."

The question naturally arises here: If it is the function of the kidneys to eliminate urea, and if those organs are healthy, why do they not perform their duty?

I answer, because by the disease or disorder of some other organ or organs, solids in a state of liquefaction may be so much increased in the blood that the kidneys, in trying to eliminate them, are, so to speak, compelled to neglect a part of their ordinary duty. Consider the amount of sugar eliminated in diabetes—or bile, in jaundice. Is it any wonder that urea should be allowed to accumulate, while the sometimes enormous quantities of sugar or bile are being excreted? It may be urged, however, that diabetes and jaundice are of rare occurrence; granted, but is biliousness—jaundice in miniature—very uncommon, especially in the Saginaw Valley? Take into account, also, the triple phosphates in overwrought nerve centres, pus, etc., and is it wonderful that, in performing so large a vicarious labor, the ordinary work of the kidneys should be imperfectly performed? We must also remember that from dyspepsia, where nitrogenized food stops short of complete metamorphosis, there is "destructive assimilation," and in such cases the kidneys have to eliminate not only the urea generated by the disorganization of the tissues of the living organism, but that also produced by imperfect digestion; and while all ac-

knowledge the noxious effects of uræmia in complete suppression or retention of urine, why deny it in part where there is partial suppression or retention? Why acknowledge it as a whole, and deny it in its parts, as it is axiomatic that "the whole is equal to its parts"? How often, in reports of cases, do we read "examined the urine for albumen—none," indicating unmistakably that the investigator had in his mind uræmia; and, had albumen been found, or had analysis been made for urea direct, how many long, learned, ingenious theories as to the diagnosis and etiology of some diseases would have been unwritten! Possibly, had the quantitative analysis for urea been as easily made as the qualitative one for albumen, the subject might have received more general attention; but by Thudichum's method, utilized with the accurately constructed apparatus, so conveniently arranged by Prof. Austin Flint, Jr., which, though not absolutely correct, is sufficiently exact for all practical purposes, so much of the trouble and time are saved, that the great difficulty in the way of such analyses becoming a matter of every-day aid in diagnosis has been removed; and surely the legitimate way to examine for urea is to examine for urea direct, and not for albumen.

Would it, *a priori*, be considered strange that with a full, bounding, rapid pulse, increased temperature, skin dry, urine often very scanty, as is common in our fevers, would it, I repeat, be thought strange that uræmia in some degree should be present, and that the fever should be modified by its presence? I have no doubt that often the low muttering delirium of such fevers is due directly to that agent, and that many cases of so-called muscular rheumatism and neuralgia ought properly to be designated uræmia, and I have, on that theory, treated and relieved of both the last-named maladies that had resisted appropriate remedies for rheumatism and neuralgia prescribed by eminent physicians. I have also found many cases of epilepsy, and some forms of spinal disorders, due entirely to, or much aggravated by, the same cause; and in that terrible disease, cerebro-spinal meningitis, of which I fear one *knows* little excepting its fatality, I believe it will yet be found that uræmia exerts a very marked influence, if it is not directly the cause. I made careful examination in that direction in a few cases, but they were too few in number to justify the expression of any opinion from my own limited personal observation. I had intended to treat this part of the subject more fully and minutely, also to have devoted some space to treatment, and to the report of

cases of which I have a number recorded, but find I have already occupied too much of your time; and will, therefore, only further say that I do not claim to be the only physician who believes that uræmia is not dependent upon albuminuria (although I so believed when I commenced the investigation, and for some years afterwards) as I now know that Bedford and some others have expressed that opinion, but such views are not published as far as I am aware in any work that the general practitioner would be likely to have or look to for information on the subject. Bedford himself apologizes for misplacing his article on that subject, in his work on "Diseases of Women and Children," and *there* it is simply an enunciation of the fact, the correction of a scientific solecism, to which correction he appears to attach no practical value, and, as far I know, it is a position that very few *practically* at least receive; and if I have, by simply stating some facts which every physician can verify for himself, and reconciled some seeming antagonisms, so that the importance of the subject in an every-day practical point of view shall be generally recognized by the profession, so that analyses for urea will become as common as they are now for albumen, uræmia, a potent cause of suffering and death, *per se*, will be known and treated on its own merits, being no longer concealed behind its mask—albumen. If such shall be the result I shall have accomplished all that I intended, and I believe the public and the profession will be mutually benefited.

FLINT, MICHIGAN, May, 1874.

A NEW ANTIPRURITIC REMEDY.

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of New York.

Eighteen months ago we presented to the profession the "*liquor picis alkalinus*,"[1] which had proved itself valuable in certain cutaneous affections in relieving itching in many instances, and whose value in this and other directions is daily becoming more evident. The failure of this as an antipruritic in some cases, as might be expected, has led us to the adoption of the compound here presented, which has thus far rendered inestimable service, but which has not, to my knowledge, been heretofore commonly known.

More than a year ago I noticed in a medical journal the item that equal parts of hydrate of chloral and gum camphor when rubbed well together are converted into a fluid substance—which observation was repeated in the *Boston Medical and Surgical Journal* of Feb. 19, 1874, with the variation that the substances were to be mixed together, and the conversion would take place in a few days; no therapeutical suggestion was made in either instance. Stepping into a drug store, I immediately tested the truth of this, and found, after a few minutes' trituration in a mortar of powdered camphor and Schering's chloral, that in place of two crystalline substances a transparent colorless fluid existed, of the consistency of glycerin—no solvent having been added. It at once occurred to me that this would be of value in allaying itching, inasmuch as camphor acts ofttimes very gratefully when locally applied for this purpose, while I have long employed the chloral internally to the same end.

I therefore had some ointment prepared after the formula:—

[1] ℞.—Picis liquidæ, f℥ij; potass. causticæ, ℥j; aquæ destill. f℥v; ft. liq. picis. alk.; use diluted. Archives of Scientific and Practical Medicine (Brown-Séquard), February, 1873.

℞.—Pulv. gummi camph.,
Chloral hydrat., aa ʒj.
Ung. aquæ rosæ, ℥j.—M.

Rub the chloral and camphor carefully together till fluid results, then add slowly to the ointment, mixing well.

This when applied to the healthy skin produces no effect, but possesses great power in arresting itching without overstimulating the parts. It does not answer when the skin is at all broken; it is then necessary to employ other less irritating agents, but the burning sensation caused on its first application lasts but a few moments, while the relief occasioned I have known to last for hours or even a whole day.

This compound is soluble also in almond oil, alcohol, and ether to a considerable strength, as also in collodion. I have never employed it other than in the formula above given, except that I have ordered it of a less strength, half a drachm of each to the ounce, also increased to a drachm and a half of each to the same quantity. I should expect a solution of moderate strength in collodion would prove useful in localized itching. I will give two or three illustrative cases:—

Mrs. J. C. L., aged 34, seven months pregnant, was distressed with a most intense itching which commenced six weeks previous to her being referred to me by Dr. H. B. Sands, on Dec. 4, 1873. The itching was first noticed on the left arm near the shoulder, then on the right and on both shoulders behind, and soon the outer surfaces of the legs and the region of the waist became affected. When first seen her condition was indeed pitiable, the more so as she had become convinced that the distress would last until confinement. Her general condition was poor, she looked worn and nervous; pulse 104, and weak; tongue coated; appetite very poor, and bowels irregular in action. She gave the history of being subject to neuralgia, and of having had a similar attack of pruritus when not pregnant nine months previous, which disappeared on the use of six sulphur baths. The skin when seen presented only the appearances due to scratching, namely, excoriated points and lines, resembling those seen in phthiriasis, but no traces of pediculi could be found nor indeed could any suspicion of this exist.

Diuretic and tonic treatment seemed to effect very little, but some relief was afforded by the alkaline tar-wash before referred to, diluted about one part to sixteen of water. This was only temporary, and chloral and bromide of potassium internally failed to procure even a quiet night. The chloral and camphor in ointment,

a drachm each to the ounce was then prescribed and the relief obtained was immediate and permanent, that is, with the application repeated every few hours at first, for she never really suffered from the itching after its first use, and in six days she had no further need of it. It is but right to state that she continued the same internal treatment as before, but she did not require any medicine to induce sleep. On the disappearance of the cutaneous symptoms a hoarseness occurred, evidently nervous in origin, which lasted until delivery, as it had accompanied also a previous pregnancy to the end.

Mrs. F. C. M., aged 32; a lady of highly nervous organization, who was in the habit of greatly overworking in a literary line; has had several attacks during the last two and a half years of a very peculiar pruritus extending down the right arm and on the right shoulder behind to the median line. The itching and burning she describes as horrible, and the skin was found to be hard and scratched. On former occasions she had obtained very great relief from the *liquor picis alkalinus* diluted, with internal medication, but nevous exhaustion had been repeated so often by excessive literary work that all the old measures failed to give relief at the last attack I witnessed. The nerve distress is further shown by a partial writer's cramp.

She was directed to abstain from using the right hand as much as possible, substituting the left, and was given the chloral and camphor ointment, a drachm each to the ounce. The relief following the first application was prompt and perfect, and a few days sufficed to remove the itching entirely, she using the same internal treatment which before proved ineffectual; no return of the pruritus has yet occurred after the expiration of several months. Whether on a recurrence of the skin trouble the remedy will still exercise as beneficial an influence it is impossible to say, but the relief afforded in this instance was as striking as it was gratifying. I will give one more case:—

Mrs. B———, aged 56, a large, fleshy lady, was kindly referred to me by Dr. A. L. Loomis, for a *pruritus vulvæ* which had lasted six months. During the previous summer she began to have more or less irritation about the vulva, and had scratched herself to relieve it, continuing to do so till seen by me in Dec. 1873. A very large number of remedies had been most judiciously applied, with but very little relief to the distressing itching, and on inspection the parts were found to be greatly thickened and discolored

with more or less excoriation reaching down on the thighs and toward the anus. The clitoris was enlarged and elongated, but no follicular condition of the mucous membrane, no cervical erosions, nor any apparent cause of the trouble could be discovered. The urine was examined and gave no indications of glycosuria. The irritation and itching of the whole region she said were beyond description, and her troubled expression of face told the same story. She was then keeping the bed and using hot hip-baths night and morning with some comfort. These latter were directed to be exchanged for fomentations with very hot water frequently repeated, and iron, quinine, and Fowler's solution were given, also a diuretic mixture later.

Some considerable amelioration was obtained subsequently by the alkaline tar used in the other cases, but soon this seemed to have lost its effect, and various other applications failed to cause improvement. After about two weeks' treatment, the camphor and chloral ointment was prescribed with the happiest results, the itching disappearing entirely sometimes for seven or more hours after its application, while in the mean time the patient gained in physical condition, and the thickened state of the parts which had been caused and kept up by scratching subsided, and she was able to be up and around with a great degree of comfort. There still remains some itching at times, and the patient has just left for Europe for change of scene, etc., though for the last two months or so the irritation has been very slight. The relief afforded by the ointment in this case far exceeded that obtained from any other measure attempted.

In using this remedy the only caution I know of is to see that the parts to which it is to be applied are not greatly if at all excoriated by scratching, as the application is then pretty painful, and the unprotected derma is irritated and possibly inflamed thereby.

From its success in these three forms of itching here exemplified, namely, that of pregnancy, that of the vulva, and that due to a pure neurosis as in the second case, I would suggest the employment of the camphor and chloral compound in the general pruritus attending the senile alterations in the skin, also in anomalous cases and in those of chronic papular eczema or lichen, where itching is a prominent feature. Likewise in the *pruritus hiemalis* lately described by Dr. Duhring, of Philadelphia, in the *Philadelphia Medical Times*, of which I have seen some instances.

The ointment loses strength on standing exposed, and should be made fresh very frequently.

THE RELATION OF PHYSIOLOGY TO THE PRACTICE OF MEDICINE.

By E. W. GRAY,
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PHYSIOLOGY is rising to the dignity of a positive science. If we grant its postulates, we may accept its prophecies as true. Given a healthy organism and certain climatic and alimentary conditions, and we can predict the future of good or of evil with infallible certainty.

The practice of medicine, resting as it does, and as it must to be completely successful, upon physiology, is making progress, *pari passu*, with the advance of physiological science, becoming more and more rational and scientific.

Empiricism was long a necessity; it is largely yet a necessity, because the most intelligent physician not unfrequently meets with cases in which the physiological and therapeutic indications are obscure, and the treatment must, therefore, be tentative or empirical.

We have no quarrel with necessary empiricism. What cannot be cured must be endured, and all the better if it be with something of grace. If, as we know too well, it has slaughtered its thousands, it has by way of compensation given us most of our best remedies, and thus conferred a blessing upon the future of mankind. If, like the old school-master, it has taught a "dear school," it must be remembered that hitherto men could learn but little in any other. We disclaim any prejudice against the fathers in medicine. We believe in old folks, and in old books. There were giants in the olden time, men who devoted their wealth of ability to the healing art, whose works no one can afford to ignore. It is a very scandal that so many of the young men of the present day should be so content with a mere pamphlet and newspaper education. Professional men at least should study books, and some of the very best are from the "old masters."

It is our purpose to consider very briefly *how profoundly the practice of medicine may be affected by the disclosures of physiological Science, with a view of indicating what we think is, par excellence, the proper course of medical inquiry.*

Let it be the boast, if you please, of empiricism that many remedies have been discovered for each of all the thousands of maladies that afflict mankind; and, if we may credit authorities, it is no idle boast. In a single book I find, taking several diseases in somewhat alphabetical order, for amenorrhœa, 23 remedies; for asthma, 13; for bronchitis, 36; for chorea, 17; for diarrhœa, 31; for dropsy, 34; for dysentery, 27; for dysmenorrhœa, 18; for dyspepsia, 25; for hemorrhage, 27; for leucorrhœa, 21; for neuralgia, 27; for rheumatism, 41; and not to extend the list, for worms, 41.

But, more than this, many of these remedies are found to be wonderfully endowed with therapeutic power. According to authorities I have noted, belladonna will cure 40 different diseases, hyoscyamus 30, calomel and camphor 60 each; while cinchona approaches to a panacea, and may be relied upon as curing all fevers, all diseases of the nerves, all scrofulous and rheumatic affections, in short, most of the nearly three thousand diseases to which human flesh is heir.

Thus we have a hundred remedies for each disease, each of which remedies will cure a hundred different diseases! *Quid optatus a Divis datur!*

This is sufficiently suggestive of the *method* and the *results* of empiricism. I do not insinuate that these results are not valuable; far from it. I have already asserted the contrary. But, in view of such a showing, who does not confess to a suspicion that the method of inquiry and investigation is fundamentally at fault? Who does not believe that a "more excellent way" is now possible, or at least becoming possible?

Of what avail is it that we understand there is a distinct nervous system, presiding over and sustaining the vital functions—thus we understand the circulation, the ramification of the arteries, the veins, and the lymphatics—what does it signify that we have traced so much further than ever before the processes of digestion and nutrition, if in the use of remedies we ignore the indications of physiology and are content with mere authority and routine?

As a profession, we discard empiricism except in so far as it still remains a necessity, and we profoundly regret that any such necessity still exists. With us it is but a temporary expedient, a

necessity of our ignorance, which we hope will ultimately cease to exist; but with the charlatan it is the method of choice. The theory of Hahnemann, which makes such absurd pretensions to science, *is not a deduct of physiology*. It was born of empiricism, and, true or false, it commits its votaries to empiricism, as a fundamental principle of their practice.

In discussing the medical virtues of hydrargyrum, Dr. Stillé[1] says, "in therapeutical questions the convictions of competent judges must be allowed to some extent at least to acquire the authority which belongs to demonstration in the exact sciences;" and yet precisely this authority, to which the doctor stoops with such graceful humility, is invalidated by recent physiological experiment. "It is a strange shock," said Dr. Humphreys, a short time ago, before the British Association, "it is a strange shock to our reliance upon the evidence of practical men in such matters, that they should have gone on so long in the belief that mercury produces a marked effect upon the liver, and that they should have done so in spite of the abundant evidence to the contrary daily before their eyes, in the treatment of syphilis and other affections. That it should have been reserved to the experiments recently conducted at Edinburgh, by Drs. Rutherford and Granger, to throw a doubt upon, if not to disprove this, is a proof at any rate that the experience of practitioners needs to be supplemented by the carefully conducted experiments of trained physiologists."[2] What a commentary is this upon this postulate of empiricism as given by Dr. Stillé! We may add, that, if our confidence in the long accepted therapeutics of mercury is thus shaken, what may not happen to our faith in the remedial powers of the hundred and one other agents whose claims are not so well established?

"The doubt thrown upon the action of mercury upon the liver," continues Dr. Humphreys, "the announcement of M. Lorain, that digitalis augments the force of the heart's action and diminishes and regulates its beats, the observation that alcohol lowers the temperature in pyrexia, are sufficiently startling to make us hesitate respecting the accepted views of the effects of remedies. Added to the revolutions of opinions on apparently established points, which many of us have witnessed, they make us long for some additional sources of information to show us better light in this dark and difficult road."[3]

[1] See Stillé's Therapeutics and Materia Medi a, vol. ii. page 819.
[2] See Half Yearly Comp. Med. Science, part 13, Jan. 1874, p. 10.
[3] Loc cit.

We can all rejoice with him that "the ground has been broken and the seed sown from which the fruit of a more precise knowledge of the effects of medicines—the *modus operandi* as to the parts of the body which they respectively affect, and whether it is by influencing the chemical, the osmotic, or other qualities of the fluids and tissues. So that we may learn what it is that a medicine really does, and thus have some scientific basis for its employment in the treatment of disease.

"It is," says Dr. Hughlings Jackson, "an anatomical inquiry to seek the organ or part damaged. It is a physiological inquiry to search into the defective workings of the tissue or organ damaged. It is a pathological inquiry to trace the processes by which the nutrition of the tissues is altered."[1] While anatomy segregates the respective tissues and constituents of the system, and displays their organic relations, it is the province of physiology to discover the occult forces which constitute the life of all anatomical elements —to aggregate the facts and generalize the knowledge relating to them, and thus reveal the laws of life. Every tissue has something peculiar in its properties. A nerve fibre never contracts, a muscle fibre never conducts a sensation or impression.[2] Each of the several organs and tissues is endowed with a life and power *sui generis*. We know that these peculiarities of function depend upon differences in anatomic constitution, that the development and conservation of these histogenetic powers requires the existence of certain hygenic conditions, and the observance of certain laws—that any departure from such conditions, any violation of such laws, entails disease and death, and it is the appropriate province of physiology in its broader sense, to disclose at once both the conditions of health and the causes of disease. The advance of pathological science renders it more probable that derangement in organic function always results from some lesion or tissue, or some abnormal change in its anatomical constituents, induced by some external agency or disturbance in the conditions of healthy growth.[3] The power to discover such lesion, and the agent producing it, to so interpret the symptoms as to properly apprehend the causes of disease, belongs only to physiological science. What are symptoms to any physician more than flashes of the shifting borealis to the anxious sailor, or the illusive ignis fatuus seen in

[1] See Brit. Med. Journ., May 10, 1873; Clinic, May 31, 1873.

[2] Carpenter's Principles of Human Physiology, page 213. [3] Ibid.

the dark distance to the uninstructed peasant, if he do not apprehend their physiological significance? They are indeed phenomena associated with some disturbance of health, the nature of which, and the cause with its *modus operandi*, are alike imperfectly understood, or wholly unknown. True, a hundred remedies are at hand—remedies which have been tried in somewhat similar cases, tried and thought useful by some, tried and thought otherwise by others; possibly they cured those, possibly they will cure this; and the doctor proceeds with his prescription. His remedy is prepared. The nature of its action, what part or organ or tissue or fluid it will affect; whether it is to antidote a poison in the blood, or effect a change in its chemical constitution; whether it is to supply a nutritive or excretive want of the system, are in many cases, I may say in most cases, alike unknown. The *modus operandi* of the remedy is as little understood as that of the disease itself. If the patient recovers, he divides the credit with his authorities and takes his pay; if the patient dies, he divides the responsibility with his authorities and takes his pay.

We assert here in our place that it ought to fill any physician with profound concern, that symptoms should ever present themselves to him whose physiological significance he does not understand. That they do occur in the practice of our best men is undoubtedly true. In the present condition of medical science all are subject to this humiliation. But we hope the time is coming when physiological science will be able to so translate for us the symptoms of disease—these hieroglyphics of nature—as to point us at once to the cause of the disease, the anatomical part affected, and the appropriate remedy.

The conditions and agencies necessary for the conservation of health are those which are best suited to recovery from disease. To comprehend and appreciate a condition of disease, the physician must be able to understand and appreciate the condition and processes of health. How could he intelligently treat a case of dyspepsia without understanding the process of digestion, or a case of congestion without a knowledge of the circulation and the laws of osmosis? How could he address himself to a case of general debility or anæmia without a knowledge of the laws and processes of nutrition and the various processes by which it may be sustained? The rational treatment of every disease thus involves a knowledge of some physiological process, without which the physician is committed to experiment—to a tentative treat-

ment, and, with few exceptions, must wait for doubtful results. He is constantly in danger of making mistakes—mistakes in diagnosis, mistakes in remedies. Instances in which he has actually done positive injury are not wanting. It was once supposed that bleeding would relieve congestion, and venesection has scarcely yet ceased to be considered the sheet anchor in all inflammations and sthenic diseases.

But it is now definitely known that congestion is not produced by too much blood in the system, and, therefore, bleeding is not the physiological or rational remedy. Aye, it is at least presumptively evident, that congestion is the result of an altered condition and debility of the nervous system, and especially of the great sympathetic system, which presides over the circulation, and venesection, lessening the tonicity of the vascular system, favors the accumulation and stagnation of the blood in the capillaries, and thus tends to increase the evil which it was intended to relieve.

Next to bleeding, the use of blisters in inflammatory and sthenic affections has been most universal. Depletion has been the key note of practice in all such cases. But it is now definitely known that in such cases there is an undue proportion of fibrin and white corpuscles in the blood, and that blistering, by establishing a local inflammation, increases the proportion of these blood elements *already too large.*[1]

It was long the custom of the profession to forbid water in certain cases of contagious and other fevers. It would produce "dangerous revulsions" and increase the quantum of "vicious humors" in the system, and it must not therefore be allowed. And this in view of the physiological fact, patent, one would think, to the most superficial observer, that water is constantly passing off from the lungs and skin and kidneys, and that it must be duly supplied upon pain of increasing the disease. If a human body of one hundred and twenty pounds be evaporated to dryness, it will not weigh more than twelve to fifteen pounds. More than three-fourths of the body is in a fluid state. The normal quantity of fluid cannot be greatly and persistently changed without disaster, and the persistent interdiction of water in such cases, when the thirst is almost always great, must fan the burning embers of disease to a flame. These sad illustrations, were it necessary, could be greatly increased. The time has fully come when every

[1] Carpenter's Physiology, see 707.

physician should put his practice into the crucible of physiology and submit it to appropriate tests. All theories of the *vis medicatrix* that ignore physiology, are built upon the sand, and must ere long consign their votaries to the ignominy of the charlatan and the mountebank.

In the present state of medical science it is too obvious for argument that the physician should have knowledge of the kinds of food, fluid and solid, best suited to health and to the diseases he may treat; he should have knowledge of the curious and wonderful process of digestion, the part performed by the respective digestive organs and digestive fluids; that he should have knowledge of the process of endosmosis, the change wrought upon the chyle while passing through the lacteals and mesenteric glands, the functions of the lymphatics, and the transmission of the elaborated lymph and chyle into the blood; that he should have knowledge of the circulation of the blood—its ramifications in the arteries and veins and capillaries, the processes of exosmosis and elimination, the functions of glands, the office of lungs and skin—in short, that he should know all that the microscope and histological research have revealed concerning the whole subject of nutrition and disassimilation as a preparation for his responsible work.

In addition to this, it is equally evident that he should have knowledge of appropriate remedies. It is hardly enough that he know what the authorities say of remedies. His knowledge should embrace all that is known of the specific and physiological effect of remedies, and the *modus operandi* of cure. Armed with such knowledge, he is prepared to prosecute his studies, and to turn his observation and experience to account. It has already been intimated that physiological experiment is playing sad havoc with the formulas of empiricism. Already many of the pseudo remedies of the olden time are quite discredited. One empirical remedy after another has come to the surface, has had the popular tide for a time, and, then going down, is lost from light; and who can doubt that many of the remedies of to-day will vanish forever at the touch of physiology? The physiologist is fairly in the field. He is subjecting all our materia medica to the crucial test of physiological experiment. With his microscope and test-tube he is going through our nostrums with merciless incivility, and he is putting so many of them to shame that our professional heart

flutters, and our professional confidence falters. The "humors" of Galen, that have figured so largely in medical literature, have disappeared from the roll of pathological theories, and many of the remedies which their hypothecation brought to light, have disappeared from the materia medica. The sharp distinction made between sthenic and asthenic affections is wearing away and clouding over, and the immense influence which this distinction has exerted in the practice of medicine is diminishing. Very much that has been said about "phlogistics" and "anti-phlogistics," "stimulants" and "sedatives," born of a misconception of physiological conditions, is losing its force. A quickened pulse and increased heat do not prove an excess of vitality existing as a disease. This pulse and this heat may be but the concomitants, or, perhaps, the very means of cure, and not, in the exigencies of the patient's condition, bad symptoms indicating depletion. The inquiry should be, it is respectfully submitted, not so much whether a given remedy is stimulant or sedative, as what is its physiological effect, what organ or tissue or fluid does it modify, and how may it be relied upon as an agent of cure? What is a stimulant? A drug increases the pulse, evolves heat, gives a sense of muscular power, or quickens the intellectual powers, and we call it a stimulant; but precisely what anatomical constituent has been effected, what histological change has been wrought, what physiological process has been modified, we do not yet quite know, and it is not, therefore, enough to classify a remedy as a stimulant, and rest in such a classification. The same may be said of other prevailing classes, as sedatives, narcotics, etc. Every abnormal symptom is proof of an existing physiological vice, and in seeking a remedy it is logically legitimate only to consider the physiological requirement.

How variously and profoundly the discovery of the circulation of the blood has modified the practice of medicine could not be told on an occasion like this, and need not be. That it inaugurated a new era in the practice of medicine and in surgery will be at once conceded. With such results as this discovery has yielded before us, we need not fear to claim for physiology other revelations and other contributions to the rational practice of medicine, equally radical and equally important.

2. Concurrent with the anatomical differentiation of the various organs and tissues, we discover corresponding differences of function, hence a more definite diagnosis and a more rational applica-

tion of remedies has become possible. The progress made in a better knowledge of the nervous system furnishes various illustrations of the truth of this statement. The fact of "symmetrical disease" once pointed the practitioner to systemic or constitutional indisposition, for which he proceeded to administer constitutional remedies so called. They now point him to an affection of the nerves in anatomical connection with the seemingly affected symmetrical parts, at some distant point, where such nerves are in juxtaposition, to which point or location, remedial effort is to be directed.

"*It is only necessary to take into consideration all the nerve fibres affected, to be able to locate the disease at the point where the fibres are in anatomical connection.*" By aid of this law, first announced, we believe, by Dr. Bell, we are enabled to distinguish apparent from real peripheral lesions, and to formulate in definite laws the nature and character of a given disease (Benedikt, *Trans. Soc. Physicians*, June, 1871). The recognition and due appreciation of this dictum of physiological science, shedding as it does a new light upon pathological research, is destined, we doubt not, to work most important changes in the diagnosis and in the treatment of disease. It is not assuming too much to say, that many if not most of our diseases are located primarily in the nervous system, and not unfrequently at a point quite distant from its peripheral and sensible manifestation.

Until quite recently, we believe, it was not suspected that a disease so essentially local and organic as diabetes could depend upon the irritation of a nerve fibre at a point in the distant medulla oblongata, but actual experiment has proved that a disease very similar if not identical with this is thus produced. Indeed, the recent microscopic observations of Dr. W. H. Dickinson,[1] have confirmed the suspicion of Bernard, that the lesion of diabetes is nervous and located in the medulla oblongata, to which the physician, quitting his former practice, should direct his attention.

"Let the most prejudiced observer," says Dr. Whitaker,[2] "read up the action ascribed to alcohol in fevers in different works on practice, before the physiologist put it unchangeably down. Here it is advised to push it to the utmost. Here to refrain from it altogether. Each man spoke from his own experience. Comes the

[1] Med. and Chir. Trans. 1870, p. 251.

[2] The Address Introductory on Physiology to the Med. Col., Ohio, Oct. 1, 1873.

physiologist with his thermometer. Alcohol lowers the temperature is the result of his experimentation, and the indication for its use is established."

"The surgeon," he continues (loc. cit.), "used to cut out the facial nerve, have the face paralyzed and deformed for facial neuralgia, until the physiologist taught him that the facial is a nerve of motion, that to the trigeminal he must look in disturbances in sensation. And then he would cut out this nerve down to its escape from the skull, excise the ganglion of Meckel, until he was again taught by the physiologist that the ganglion is only a reënforcing organ of the sympathetic system, and its ablation could in no way permanently cure the disease."

Again he says, and I will be excused for noting an example so much to my purpose: "The dangerous disease to which many children have fallen victims, laryngismus stridulus, although admirably described by practical physicians, was never properly understood until the functions of laryngeal nerves were clearly understood. It is now known that this disease has not its seat in the larynx, where those spasms occur which excite so much alarm, but that it is an irritation of a distant part, which derives its nerves from the cerebro-spinal centre as does the larynx—that the afferent nerves of that part convey the irritation to the centre, whence it is reflected by certain efferent nerves to the muscles of the larynx" (ibid.). Epilepsy, chorea, hysteria, and a host of kindred affections have either already received, or await in the near future, the same explanation, when their rational treatment will also become possible.

3. Congestion and hemorrhage figure largely as maladies of human kind, and they have always been regarded as among the most intractable and dangerous with which the physician has to deal. In the animal organism we recognize two kinds of muscles, the striated and the non-striated. The former are found—as is well known—in the walls of the œsophagus, the walls of the stomach and intestinal tube, in the walls of the bladder, the uterus. ureters, and in the walls of the arteries and capillaries. They occur also in the bronchial tubes, and constitute a portion of the heart itself. (*Carpenter.*)

It is established by experiment that, while heat contracts the striated, it relaxes the non-striated fibres. (*Carpenter.*) If, then, a tendency to congestion should be discovered, or an incipient con-

gestion present itself to the physician, the physiological indication is definite and unmistakable. Congestion being an engorged condition of the capillaries, resulting either from undue relaxation of these parietes, or from undue force in the *vis à tergo*, the indication in either case is to strengthen the tonicity and contractile force of the capillary walls. The abstraction of heat, or the application of cold, in common parlance, to the affected part, and the maintenance of greater heat in other parts of the system, thus opening the passes for the blood to other parts, and driving it out of the affected part, is the physiological and rational indication.

In this view, it is easy to understand how too long exposure to heat tends to produce external and pulmonary congestions, and how the too long exposure to cold would drive the blood back upon the internal organs, until congestion is somewhere established.

But physiology points to another remedy, and one especially adapted to those internal congestions where cold cannot be well applied. The ergot of rye has long had a reputation for causing the contraction of the muscles of the uterus. Experiment has established the fact that, taken into the system, it stimulates the non-striated muscles generally to contraction.[1] In cases, then, of congestion or of hemorrhage (for the indication would be the same for both), involving the lungs, the stomach, etc.—all organs and tissues in which the non-striated muscles exist, the physiological indication would be met by the administration of ergot. By its use there might be such an arrest of dangerous hemorrhage as would at least give time, and increase the chances of recovery.

4. The increased knowledge of the processes of digestion enables us to comprehend and appreciate, more than ever before, the disabilities of the digestive apparatus. If it be true that the gastric juice is particularly employed in emulsifying albuminous and fibrinous substances, while it does not affect oils and farinaceous substances, that starch and sugar and the oils are digested in the small intestines by means of the pancreatic and intestinal secretions; if it be true, also, that lacteal absorbents are not distributed either upon the stomach or the large intestines: how profoundly do all such physiological facts modify all dietary regulations and the treatment of certain affections of the alimentary canal! To feed a patient suffering from stomachic indigestion upon beef-tea and boiled eggs, as is not unfrequently done, would be as irrational as

[1] Dr. J. L. Whitaker, in Transactions of Ohio Medical Soc., 1872.

to call upon the only sick and prostrate member of a family to perform all the labor of keeping the house. To feed one suffering from intestinal indigestion upon corn starch and crackers—a most common practice—involves the same absurdity. If it be ascertained that all the digestive fluids are vitiated, or so suspended as to impair their functions, pervert digestion, and threaten starvation, physiology points us to the proper means of vicarious alimentation. Certain alimentary substances in a fluid state pass by endosmosis at once into the blood, are elaborated within the veins and arteries, and prepared for assimilation without passing through the lacteal and mesenteric glands. The judicious use of fluid food may therefore be relied upon, to some extent, for nutrition, when ordinary digestion is impossible.

Moreover, the peripheral lymphatics, like the capillary bloodvessels, ramify upon the surface, inosculating and converging as they pass inward, and finally, all united into one trunk, connect with the vena cava, into which their contents are poured. Both these and the capillary bloodvessels are capable of absorbing various gases, liquids, and oils, when properly brought into contact, and it is definitely known that they actually play an important part in furnishing nutriment to the system. By general and persistent bathing, therefore, and anointing the surface with suitable nutritious substances, the system may be indefinitely sustained by the endosmosis of food, when ordinary digestion is impossible.

A physiological fact once established stands in relation with so many of the vital processes, that it may be drawn upon by the intelligent physician, and made subsidiary to the healing art in numerous and widely different cases. I will, however, allude to but one other aspect of physiological science in this connection.

5. It is now well known that difference in original structure, as well as the resulting difference of function, depends not upon the blood which nourishes the part, as was once supposed, but upon the peculiar cell endowment of the given part. An apparently homogeneous fluid nourishes and sustains the most diverse and heterogeneous set of tissues. More than this. The most healthy blood will nourish and sustain the life of the most abnormal and unhealthy growths—an ugly brood of life—destroying parasites and tumors. Very many diseases which were once thought to be constitutional, arising from some morbid diathesis or dyscrasia, implying some vice of the blood, are now known to be sometimes parasitic, and always local, demanding, at least in their incipiency,

local treatment. The theory of a dyscrasia belongs to another age —to a time anterior to the researches and discoveries of the immortal Haller, when the physician, knowing little or nothing of pathological science, could not understand the organic lesions with which he had to deal, and ascribed to the whole system what seemed to affect the general health; when a constitutional dysthesia was understood to outcrop, in local diseases, and these local diseases therefore were thought to require constitutional treatment. It is not here asserted that the chemical constitution of the blood may not be altered to the injury of health. Nor is it denied that certain organic poisons may gain admission to the blood, and by their presence and reproduction in it disturb its functions to the prejudice of health and life, but against the dim illusion of a dysthetic diathesis—an indefinable but wretched dyscrasia, in which nothing in particular is at fault, but everything in general is wrong, physiology protests as one of the crude conceptions of an age that is past. "*Disease depends upon lesion of structure or of function.*" (*Haller.*) This is the law to which there can be no exception, and it is pre-eminently the duty of the physician, if the resources of physiological and medical science have yet rendered it possible, to ascertain the lesion and apply the remedy. The perverted force of a few gland cells may vitiate the secretion of the gland with which they are in function and in fact identified. If we reflect that the health of the general organism depends upon the normal development and functions of millions of cells, the correllation of whose forces is such that if one set fails, in whole or in part, the others, some or all of them, will be more or less disturbed, we can readily understand how important it is to trace a disease to its local origin if we would treat it successfully, and how a disease, which is strictly local in its origin, may soon involve the general health, and even seem to be constitutional.

I have now sufficiently indicated the method of inquiry which I think pre-eminently proper for the medical practitioner. The physician has hardly read up his profession if he does not realize that "the passage of physiology, from a speculative to a positive science, is the signal for a revolution in the practice of medicine." (*Draper.*)

That we are now able to differentiate morbific influences and trace disease to its fountains, to examine into its molecular condition—its histological relations; that we are able more than ever

before to trace the causes, the nature, and *modus operandi* of disease, is due to advancing physiological science.

Accepting the aid of the microscope, and revealing in detail the most delicate structures, it invites to pathological research and the study of disease in its incipient and more easily controlled stages. It is breaking the charm of mere authority and routine, and inspiring the profession with more philosophical views of their work. It shows how easily affected are the delicate tissues and organs by external agents and conditions—by undue degrees of heat and cold, by hurtful gases, by various organic and other poisons, and points the intelligent physician to many causes of disease hitherto unknown. It is subjecting every tissue and animal fluid to the rigid ordeal of chemical and histological analysis. It is extending its analyses to all external agents capable of affecting the animal organism, and questioning all therapeutic and hygienic processes. It is not enough to say it has already wrought great changes—it is destined to work other and still greater changes in the practice of medicine.

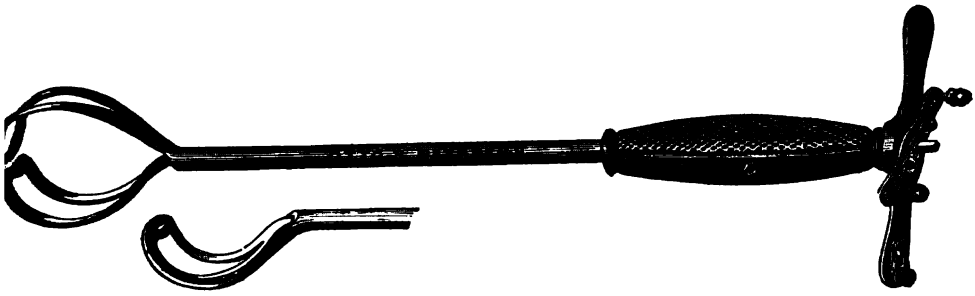
The full development and fruitage of the reforms it has inaugurated, and of those it has yet to introduce, belong to the pregnant future, to whose healing art and propitious Hygeia we relegate the *opprobria professionis*—the incurable diseases of to-day.

BLOOMINGTON, 1874.

MINUTES OF THE SECTION

ON

OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.



Dr. PARVIN'S POLYPTOME.

The instrument represented above—the drawing is about half size—is one of three that I have had made for the removal of intra-uterine polypi. It is both a polyptome and forceps, and is intended to obviate those difficulties which often occur in the removal of these growths, difficulties in reaching and in dividing the pedicle and in the extraction of the tumor.

It consists of two curved, fenestrated blades, the one[1] *lying within the other*, having straight handles, one of the handles a cylinder through which the other passes, and in which it may be made to revolve by a winch attached to it externally. The outside blade is rounded at the end, and is a little longer than the other, which, instead of being rounded, is slightly convex, and has a cutting edge.

In operating pass the blades, lying together as represented in the lower figure, up one side of the polypus and over its superior portion until the pedicle is reached; then by means of the winch cause the inner blade to make a complete rotation, and in this movement the pedicle will be divided; then a half rotation, bringing the blades in the relation represented in the upper figure, will firmly embrace the tumor, and its extraction can be readily effected.

(Since the meeting of the Association I have furnished Otto & Reynders, of New York, with a model of my instrument; they have made two or three modifications in it which I heartily approve, as these add decidedly to its neatness and somewhat to its efficiency.)

Of the other two instruments one is similar in form to that here represented, save that the blades are about the same length, each is rounded and neither has a cutting edge, and the handle of the internal blade is a tube as well as that of the external; through this tube a strong flexible wire is passed down to the blades, and through a perforation in each—like threading two needles with one thread, thus making a loop—and then the wire is returned through the tube, and the two ends are fastened to a windlass just external to the tube. Now, as in the operation previously described, after introducing the instrument rotate the internal blade—in this movement the wire is made to encircle the pedicle of the polypus—then by gradually turning the windlass the wire cuts its way through; this accomplished, loosen the ends of the wire, and then a semi-rotation of the inner blades enables the ready withdrawal of the tumor.

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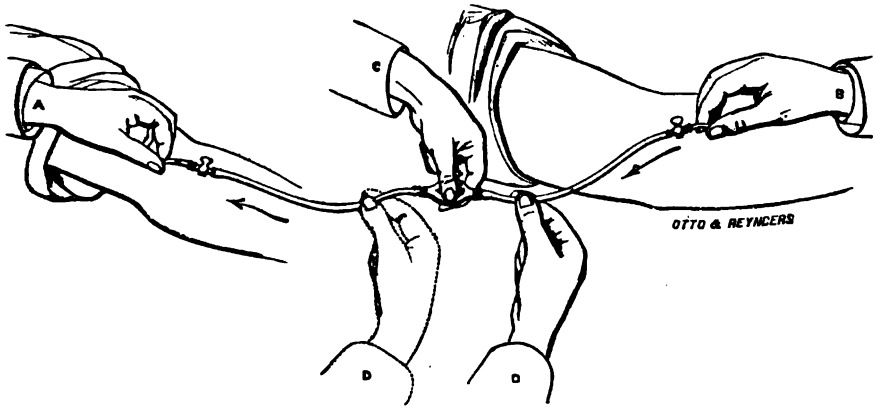
[1] For this arrangement of the *blades* I am indebted to my friend, Dr. Hollingsworth, of this city, Indianapolis, a talented and ingenious dentist, who, with the facilities of his workshop—meagre for such a purpose—made my first instrument, differing, however, very materially from the one I here describe.

The other instrument is simply a pair of long, straight, forceps—somewhat like miniature obstetrical forceps in form—with the internal extremities of the blades not rounded, but having a rather broad and thick margin, coarsely serrated, making a sort of linear *écraseur*.

In operating introduce each blade separately; then in locking them the pedicle will be divided, especially if in this process a sort of up-and-down motion is given to one or the other blade.



Dr. AVELING'S TRANSFUSION APPARATUS.

The subject of *immediate transfusion* was brought prominently before the London Obstetrical Society, in 1864,[1] by Dr. Aveling, when he exhibited a very simple apparatus for the operation; the apparatus consisting of two small silver tubes to enter the vessels, and of an India-rubber pipe by which they are united, and which has in its centre an elastic receptacle holding about two drachms. In 1872,[2] Dr. A. presented to the society his instrument modified by the addition of a tap to each tube; this is the form presented the Section, and now represented above.

The tube for insertion into the vein of the blood-donor is rounded, and the other bevelled; the former is inserted downwards, the latter upwards. The vein may be opened, as[3] suggested by Dr. A., by seizing it with a pair of forceps and incising it so as to form a V-shaped flap.

The[4] India-rubber portions of the apparatus should be completely filled with warm water, partly for cleanliness and partly to insure the absence of air; the tubes also containing water are inserted in the vein, each tube being held by an assistant; then the connection is made, and the operator compresses the bulb holding the rubber tube on the side towards the donor; then let the bulb expand while holding firmly the rubber tube between it and the recipient; immediately the bulb fills with blood, and now repeating the previous manipulation it is transferred to the recipient.

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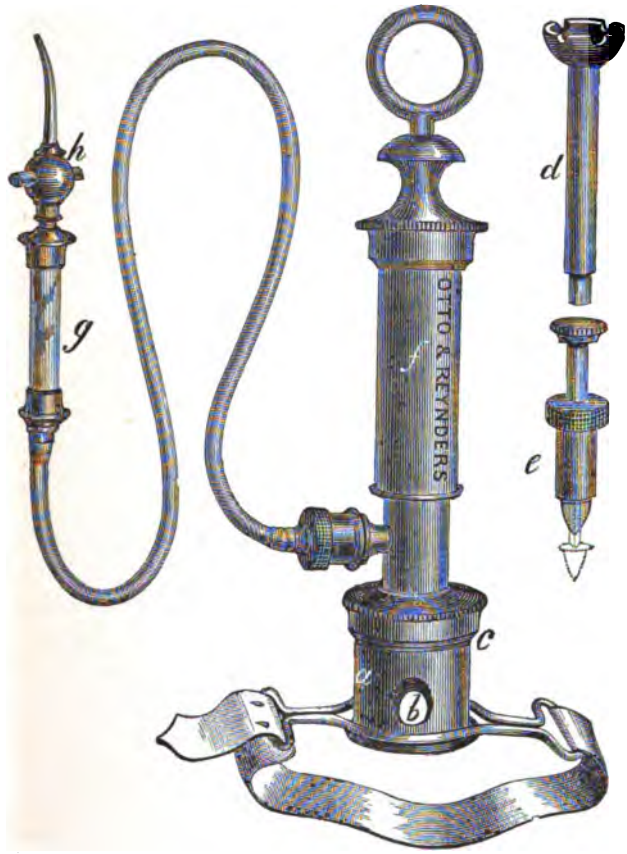
[1] See vol. vi. of its *Transactions*. [2] Obstetrical Transactions, vol. xiv.

[3] Ibid., vol. xv. It is somewhat remarkable that, in Dr. Leishman's excellent work on Obstetrics, Dr. Aveling's instrument of 1864, *not* of 1872, is represented. See "System of Midwifery," American edition, p. 405.

[4] A very complete account of the method of operating will be found in the New York Medical Record, April 1, 1874.



LEITER'S TRANSFUSION APPARATUS.

This is a recent and very ingenious, though not at all complicated, instrument with which transfusion either immediate or mediate may be performed.

It consists of a cylinder, *c*, with an oblique opening, *b*, into which the lancet, *e*, is inserted; a pump, *f*, a tube and glass receiver, *g*, and a transfusion canula, *h*; there is also a foot-piece, *d*, which replaces the cylinder, *c*, in *mediate* transfusion.

In immediate transfusion the cylinder is strapped on the arm of the blood-donor, with the opening, *b*, superiorly, in order that the lancet shall be directly obliquely downwards, and so strapped that the lancet will be applied directly to the veins elected for opening. Fill the cylinder with water; then screw on the pump, which may also be filled with water to insure the absence of air when the transfusion is actually commenced; press the lancet down upon the vein, and then pump until all the water passes off, and upon introducing the canula into the recipient's vein the blood is steadily thrown into it.

Should *mediate* transfusion, with defibrinated blood, for example, be preferred,

the cylinder, strap, and lancet are removed, and the foot-piece, *d*, is attached to the pump; this foot-piece is then placed in the vessel containing the prepared blood, the pump used as before, until the blood unmixed with water or air escapes from the canula, when the latter is inserted into the recipient's vein and the requisite amount of blood transfused.

MINUTES OF THE SECTION

ON

OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

DR. THEOPHILUS PARVIN, of Indiana, Chairman; Dr. MONTROSE A. PALLEN, of Missouri, Secretary.

The Section met at 2.30 P. M., June 2d, Dr. PARVIN in the chair. Dr. PALLEN not being present, Dr. BARTLETT of Wisconsin was appointed secretary *pro tem.*

Dr. PARVIN presented some instruments for the removal of intra-uterine polypi, and explained their use.

Dr. J. P. WHITE, of New York, stated that he had examined Dr. Parvin's instruments, and he was very much pleased with them; that they were very useful. He then moved that Dr. Parvin's remarks be written out and that they be published in the forthcoming volume of the Transactions, together with such plates as Dr. Parvin might think necessary to properly present the instruments. This motion was seconded and unanimously adopted.

Dr. PALLEN, the secretary, then entered and assumed the duties of his office.

Dr. BYFORD, of Illinois, then made some remarks upon the removal of polypi by vulsellum-forceps and twisting them off. He had removed polypi weighing four ounces by this means. With regard to Dr. Parvin's instruments, he could readily see how they would be very useful.

Dr. WARNER, of Massachusetts, thought that the instrument for applying the wire was very valuable, and by the addition of a chain for the écraseur could be used to great advantage.

Dr. BECK, of Indiana, then read a paper on "the method by which spermatozoa entered the uterine cavity," which elicited remarks from Dr. J. P. WHITE, who thought the question one of physiological interest. Dr. White said, "I do not consider

the writer's case a fair test. The condition of preternatural dilatation of the external os being quite exceptional and not normal. At least I am not acquainted with such a condition. I am familiar with the writings of Bischoff and Pouchet as quoted by the gentleman, and they are of greater physiological interest than of obstetrical practice. Besides, the case was one of prolapsus also, as well as the intense erotic nature of the subject experimented upon by Dr. Beck, and that altered the conditions. That the spermatozoa will enter the uterus, even if deposited upon the vulva, is a question very well established. I think the subject sufficiently interesting to merit its discussion.

Dr. J. MARION SIMS, of New York, being called upon to give his views on the question, stated:—

I have not much more to say on this subject than has already been heretofore presented in what I have published. The subject of sterility necessarily is one of importance, and I always, when practicable, determine first if the spermatozoa exist—if the husband be sterile—before beginning to treat the woman. The microscope easily determines the question, and I have frequently detected spermatozoa in the cervix twenty hours after insemination. I have examined the cervix within six minutes after coition, and have found no spermatozoa upon the cervix or in the vagina, and again I have seen them in abundance. Sometimes the seminal fluid is entirely ejected from the vaginal canal. I regret I did not hear the whole of Dr. Beck's paper, as I judge from the remarks which ensued that it was of great interest.

Dr. BECK. The Secretary of the Section told me in St. Louis last year of a case somewhat analogous to the one which induced the preparation of the paper I have read. I ask him to state his case to the Section.

Dr. PALLEN. I recollect the case referred to by Dr. Beck. It was that of a lady who placed herself under my care for nymphomania. This person was very much excited whenever the genital passages were examined either by the finger or by the speculum; and an orgasm was very rapidly and readily engendered. At the time of the orgasm the os externum had a diameter of about half an inch. When this person was placed under chloroform no appreciable orgasm manifested itself upon examination; and the diameter of the os uteri did not exceed two lines. I was somewhat surprised at their condition, altogether at variance with each other and could not explain them otherwise than by the views of Traer

and Rouget on the intercommunication of the bloodvessels of the entire generative circle, and the consequent consensuous erectility. I then read Dr. Beck's case, as it was published in the *St. Louis Medical and Surgical Journal*, and I explained my views to the lady in question, and, by her consent, several times chloroformed and etherized her to see if the speculum or finger produced the usual erotic excitement. The result was as first obtained. There was no orgasm or dilatation of the external os under anæsthesia. The deductions I drew were, that the erotic excitement produced general erectility of the entire generative circle, and that the dilatation of the external os was a part of this process. Upon looking up the literature of this subject I found that Prof. Courty, in his work on the Uterus and its Annexes, makes the statement that even if the woman is unconscious of erotic excitement, there is, nevertheless, a certain amount of erectility which expands the external os, and which thereby facilitates insemination.

Dr. BYFORD. If I say anything upon the subject it will be in opposition to the theory of the gentleman (Dr. Beck) who read the paper. I believe that erection takes place not only in the neck of the uterus, but in the vagina, and in the external portions of the vagina, and it is as likely in the entire uterus as well as the rest of the organs of generation. A large amount of interest attaches to this subject, and a great many facts have been reported with reference to it. The observations of several persons of large experience in such cases go to show that impregnation takes place in different ways at various times. I recollect one case in which I operated for the absence of the cavity of the vagina, which was nothing more than the bottom of the fissure formed by the genital canal. I operated and introduced artificial fillings, and left the patient under the care of her physician, expecting him to keep the cavity of the vagina open with the aid of bougies. This was very imperfectly done, except for a short distance from the external organs of generation. Three years afterward this person came to me and inquired as to the practicability of getting married, stating that the vagina was improved in size. There seemed to be a very narrow constriction in the vaginal canal, and I succeeded in introducing a small probe into the uterus. I advised against marriage, and advised her to continue the use of the artificial fillings. However, she did get married, and in about eighteen months gave birth to a child. A great deal of assistance was required at the accouchement. In the first place, the physician

had to open the vagina for at least an inch and a half, and then make use of the forceps. The mouth of the uterus must have been a considerable distance from the point where the seed was deposited, and the seminal fluid must have passed through that narrow canal. We know of a great many cases where penetration has not taken place, and yet conception has occurred. It is my opinion that the mode of impregnation is somewhat as follows: After the seminal fluid is deposited at the mouth of the uterus by injection from the penis, these myriads of little animalcules swim about in every direction, some going down, some to the side, and some going into the cavity, continuing their course—not by intelligence or instinct—until they arrive at the ovarium. I suppose a great many of you have seen the motion of the fluid. Its activity is amazing. When the semen first leaves the penis it is as lively as tadpoles swimming in water. This activity enables the animalcules to swim across the focus of the microscope in a very short time, showing that it takes but little time to traverse quite a distance.

Dr. BECK. I do not propose to deny that there have been cases of impregnation without penetration; I specially made that statement. I take exception to the professor's theory of impregnation. I want to know how the spermatozoa get into the uterus. I accidently stumbled over the facts embodied in my paper, and, in endeavoring to explain them, I have taken that side which seems to me to be the most consistent. If I have failed, I would say that I only aimed to get at truth. That is my object, nothing else. I was astonished at what I observed, and, in endeavoring to find out the cause, was impressed with the facts and statements embodied in my paper.

The Chairman then suggested that a brief abstract of the paper should be prepared, which, together with the discussion, should be published in the report of the Transactions.

A motion was made and seconded to that effect, but

Dr. BYFORD remarked that this course might not meet the views of the author of the paper.

Dr. BECK. I have had as much writing upon this matter as I care to do, and I object to making an abstract. My paper contains a great many translations, which, to do the subject justice, should be published in full.

CHAIRMAN. Under the circumstances, the simplest way will be to withdraw the paper.

This being done, the Section adjourned, to meet at 2.30 P.M. on Wednesday, June 3d.

WEDNESDAY, JUNE 3d.

The Section was called to order at 2.30 P. M. by the Chairman.

Dr. R. B. BONTECOU, of New York, read a paper on the *Reduction of an Inverted Uterus of six months' standing without aid of the hand in the vagina.* The author produced the instruments alluded to in the paper, and explained their application.

Dr. SIMS. We are indebted to every man who comes to us with any new idea, and it appears to me that this is a very valuable one, making a fixed pressure upon the chest instead of an elastic one. I think the day has passed for the amputation of an inverted uterus. In the first case that I ever saw, after fruitless treatment for weeks and weeks, we were compelled to resort to amputation of the organ. The operation had frequently been done before, and often with success; but since Dr. White's contributions in this direction, I do not remember a case of amputation. A great many cases have come under my observation, and I recall to mind one that occurred last fall. The patient was brought to the Woman's Hospital, and the uterus was reduced according to the principles laid down in the publications adverted to. I never found any difficulty in pushing the uterus up to the constriction at the os internum, when the fundus of the uterus can easily with the hand be reduced, and is not so difficult as in carrying a large body through the os internum. Some years ago, I suggested the propriety of making incisions along the surface; and the same idea has been suggested by Dr. Barnes of London. I never performed the operation, nor do I think that he has done so. To facilitate this operation, Dr. Thomas has suggested gastrotomy, and has gone so far as to try the operation. Two or three years ago he tried the operation, by opening the abdominal cavity and dilating the contracted portions of the uterus, and was fortunate enough to reduce the organ. He subsequently repeated this operation in another case, but unfortunately the patient died. He had the manliness to publish this, which is a warning to us all not to attempt such an operation until all other means are exhausted. In regard to restoring the fundus, I have found no difficulty in following out the process described by Dr. Noeggerath in some of his publications a few years ago. I accidentally discovered the means by which I accomplished this. The case occurred in Springfield, Mass., in 1869. After cutting the cervix, and restoring the fundus even with the os internum by pushing,

I accidentally engaged my thumb in the cornu. That gave me a lever, by which the thumb was enabled to thrust the fundus through the os internum, and in a very few minutes the uterus was reduced. The very same manœuvre was accomplished in the Woman's Hospital last September. I did not want to exhaust myself, and allowed the young men to reduce the uterus by placing the fundus on a level with the os. When that had been done, I took charge of the case, not telling how I expected to effect a cure, and by forcible pressure of the thumb of the right hand upon the left cornu, I was able to pass my finger up to the reflected portion of the os internum, and in a few seconds the fundus passed into its proper position. Within the last few months, Dr. Simon has published to the world a very remarkable discovery, by which he passes the hand up the rectum, along the curvature of the sacrum, and up through the pelvis, for the purpose of examination in disease of the liver, etc. The hand can pass in any direction, the liver and the spleen can be touched, and all the organs, not only in the pelvis, but in the abdominal cavity, can be got at by this method. This is a very valuable discovery, the unpleasant results of which have yet to be realized; and with such discoveries and such improvements as have been brought under our notice, cases of inverted uterus will be made much easier than they were before. I have not had a very large experience in the reduction of these cases; but it does seem to me that the time for amputation has passed, and we can hardly expect it to be brought into use again.

Dr. BYFORD. With reference to the *modus operandi*, I shall have to speak theoretically. I have not had occasion to make practical use of it since Dr. White published his description. I can easily believe the unresisting handle to the instrument would be an improvement, and that the pressure ought to be regulated by the discretion of the operator in using this resisting handle, as it is so easily swerved from one side to the other. I have had three cases of inversion of the uterus, and have succeeded in two of them; the other one is not yet reduced. In the instance in which I failed, I attempted to make the reduction suddenly, with the best instruments I could get, and following the directions of Professor White in reference to the operation. I thought at first I could get the reduction without much difficulty, until the flanges came to the external os, whose resistance was too great; and I had to desist on account of the exhaustion of the patient. I have reduced two by the gradual method first introduced, I think, by Dr.

Smith of England. This consists of placing beneath the fundus of the uterus an India-rubber or elastic water-bag, and injecting water into it. It is removed each day, and on its reintroduction is filled up again. In one instance, by this method, it took five days, and in the other six days, to reduce the uterus. For my own part I am firmly convinced that in the great majority of instances this is far the better method of action. In the case that I have mentioned it was not required to use opiates. The patient complained somewhat of the pressure, but it was not intolerable; and, as I said before, it was unnecessary to administer opiates or anodynes of any kind. I believed then I had worked out the secret of the application of these instruments, and I applied them thereafter without much difficulty. I may remark that in different instances we find the direction of the uterus very variable. If we were to use the instrument to get access perpendicularly to the back, and then at will exert a pressure, and that pressure is kept up for hours or for days together, it seems to me it will, in almost every instance, reduce the uterus. I believe that this will be the method adopted by the profession. I am quite sure there is not much danger connected with this method of reduction. I believe, with Dr. Sims, that the discovery of Simon will add very much to the facility of reducing the uterus, for, if properly carried out, it may be dilated by the introduction of one or two fingers. We all know how yielding the os uteri is when force is used, and steadily pressed into it. Very much may be gained by dilating the os uteri with the finger.

Dr. Sims. I beg to move to refer Dr. Bontecou's paper to the Committee of Publication. I will also take occasion to say, in reference to the system of hydraulic pressure referred to by Dr. Byford, which was instituted by the great Tyler Smith, and tried successfully in his hands, that I made a trial of it at the Woman's Hospital last year, and failed after trying it twenty-four hours. The young men of the hospital also tried it some days afterwards with a like result. We then resorted to the shortest method of instantaneous reduction. The young men were on their mettle, and wanted to reduce it before some "old fogy" got hold of the case. I think Simon's method will be the means of overcoming the difficulties of such cases.

Chairman. Have you ever tried it?

Dr. Sims. Yes, sir; we tried it in the Woman's Hospital. We

passed the hand into the abdominal cavity for the purpose of exploring tumors, etc. It is not a difficult thing to do.

CHAIRMAN. How early did you recommend incisions in cases of irreducible inversion? Dr. Barnes has operated once in that way.

Dr. SIMS. My book was published before Dr. Barnes's, and contained drawings illustrating the operation. Dr. Barnes, however, does not speak of me in his book, although I sent him a copy.

Dr. BYFORD. I second the motion. I do not think that Dr. Sims gave the hydraulic system a fair trial. Twenty-four hours was not sufficient. I believe that by a well-directed effort of several days, very few instances could resist that method.

The motion was then put and carried.

PESSARIES.

Dr. SCOTT, of Canada, had a pessary of his own invention and construction to bring before the Section. Dr. Sims introduced him, and at his request presented the subject to the Section.

Dr. SIMS. The name of Hodge is largely venerated by the profession. He did one great thing, and that was the introduction of the pessary; and his name will be handed down to posterity as connected with the complete revolution of the treatment of the uterus, and conferring the greatest boon that has ever been conferred upon suffering woman.

We have lately many pessaries brought forward and called by new names, but I do not think that they should receive any other name than that of Hodge's pessary. At all events, it should not be called a Brown's pessary, but a Hodge-Brown, or Hodge Smith, or Hodge-Thomas pessary. The name of Hodge, however, will ever be connected with the mechanics of uterine troubles.

I take this occasion to pay this tribute of respect to Hodge, and wish not to lose sight of his name when modifying his invention. In regard to Dr. Scott's pessary, it seems to be a modification of what we know in practice as Cutter's. It acts very much on the same principle as Cutter's pessary, which is as follows—(explaining the construction and application of the instrument)—and is sustained by an elastic band going up between the nates, passing through a band going round the body. It can be worn by some patients with a great deal of comfort. Dr. Scott has a large practice among women, and feeling the great utility of a mechanical

contrivance for holding up the uterus, he fell upon this very simple appliance, which is simply a loop of rubber with a steel wire running through it, and is easily made longer or shorter as required by the circumstances of each case. It is introduced, passing the neck supporting the fundus; and, like the pessary already alluded to, it is fastened by a band round the body. With great magnanimity Dr. Scott has laid his invention before the profession, and would like to have it manufactured in New York, where better material and skilled labor can be procured. The one now before us was manufactured by the Dr. himself, as indeed all those he has used have been. The only objection to this pessary is that it smells badly after being some time in the vagina. This seems to me to be the only objection, being of softer material than the ordinary pessaries. I have no doubt that it would be useful in cases that are intolerant of mechanical supports. I have seen cases where mechanical appliances could not be used at all on account of the irritability and the bands of adhesion connecting the posterior walls of the uterus. To a certain extent Dr. Scott's invention or modification would meet such cases, or at any rate would, in many instances, suit where harder rubber could not be endured. It is placed here for the observation of the medical profession, and I hope it will prove a valuable acquisition to our surgical appliances. We have numerous pessaries; in fact their name is legion. By and by we will be able to discard those that are useless, and select only those that are valuable.

Dr. WARNER. I wish to ask Dr. Scott if, where the womb is tolerant, and there is an absence of soreness, he has had any difficulty in keeping the pessary adjusted so as to keep the uterus in its place. I will give my reason for asking this question: In using Dr. Cutter's pessary, which is made on the same principle, only of hard rubber, in lifting up the womb, where the pelvis is large, it is very apt, when the patient is lying on her side or walking, to slip and let the womb come down on the side. It is very difficult to keep the womb in position, and at the same time for the patient to take exercise or rest upon her side. Has Dr. Scott been able to overcome this difficulty with his pessary?

Dr. SCOTT. I may answer in the affirmative. This instrument, as it can be fixed to any size, never moves out of its position. I have now some fifteen pessaries in use. The only difficulty would be if the instrument by any means got bent upon itself; but if the uterus is thrown well back before the introduction, it will hold in

that position. What is more, in the case of a retroflexed uterus, when kept in place for some time the contracted parts will relax, and the uterus becomes straight and in its natural position. After three months' wearing of the pessary the uterus will remain in its position without its aid.

Dr. WARNER. I would like to ask another question. In what manner does Dr. Scott straighten the uterus before applying the pessary?

Dr. SCOTT. Simply with my fingers. I never used an instrument in my life. The doctor then described the mode of applying the pessary, and referred to another case of successful treatment—that of a woman three months pregnant.

Dr. WARNER. I have found many cases in my practice that could not be straightened with the finger. I do not think this pessary has any advantage over others in the simple matter of straightening the womb. I have had more success in using Dr. Hodge's pessary than that of Dr. Cutter.

Dr. SCOTT. My pessary can be adapted to any size of pelvis; you can bend it to any length you wish. In no instance should a pessary be applied before the inflammatory action has subsided. When it is thrown well forward I have not the least fear of the result.

CHAIRMAN. This may be made a fruitful topic of discussion. The whole question of retroflexion and retroversion is a very interesting one practically.

Dr. MINER, of New York. I wish to say a word on the subject of uterine pessaries. I was formerly very much in the habit of using them, supposing that this class of complaints always required some sort of mechanical support, and would have a tendency to restore the uterus to its normal condition. For the last five or ten years, however, I have been contented to lay the pessary business on one side altogether, having found no benefit in their use at all. I look upon them as causing serious irritation and annoyance. Patients have come to me suffering in various ways, and after taking their pessaries away have greatly improved. I have found the principle of mild laxatives, giving tone to the system, etc., will go a great way towards removing these uterine afflictions. Many cases would rather tolerate the flexions than they would an instrument for the uterus to rest upon. The uterus would more easily and more naturally rest upon the soft portions of the pelvis and adjacent parts, than upon any mechanical support, however ingeniously

applied. I am glad this subject has come up. Almost every physician has a hobby in this matter of pessaries, and modifications are constantly being impressed upon the profession. A new and improved one is brought forward every week; but after using almost every kind in the market, I have been in the habit of laying aside pessaries, and trusting to other methods for the relief of uterine disorders.

Dr. PALLEN. I regret that my distinguished friend from New York has taken the course he has. I regret, in fact, that any member of the profession should take an exclusive or absolute ground in regard to a matter of this kind. The doctor may have had many cases wherein the circumstances demanded a peculiar character of treatment; and while he may have been unfortunate in the number of cases wherein he has found pessaries of no service, yet he should not advance the statement that they are of no use at all. The concurrent testimony of other medical men somewhat differs from his. This question of pessaries is the bugbear of the profession. It is an extremely difficult matter, it is almost impossible, and it is certainly a great uncertainty, for any man beforehand to know what character of pessary will suit individual cases. We might as easily tell a gentleman to step into a hatter's shop and get a certain hat which would fit him without trial beforehand. We must make allowances for difference of formation. I have devoted some attention to this matter, and I find that we must explore our ground before we can act. We must not take a pessary because it is a Cutter, a Hodge, or any other form of pessary, because it is recommended by some distinguished medical man, but we must regulate our rule of action by the requirements of the case in hand. I have had many cases in which upon the first introduction I have seemed to have hit it exactly, but in twenty-four or thirty-six hours, a week, or two weeks, or probably months, the patient has returned with the pessary displaced and productive of pain and discomfiture, and of little help. I have seen pessaries worn for months, and I have seen them removed every night by the patient on retiring to bed. The rule I apply is one suggested by Dr. Sims, and one which is worthy of every effort on our part to follow, which is to teach the patient how to replace the pessary, in order that it may not be worn for a long period without disturbance. There are certain conditions of the vagina, certain conditions of the pelvic organs wherein these instruments cannot be worn at all; and one condition is very com-

mon, though not much recognized, where patients have worn the larger-sized Hodge pessaries bought in shops, distending the vagina and impinging upon the rectum and bladder. I refer to a concealed laceration of the perineum, a submucous sundering of those muscles and aponeuroses which go to make up that formation known as the perineal body. In these conditions I have seen those enormous pessaries found in the shops introduced and jammed against the urethra and rectum, and the reason assigned for these anatomical monstrosities is, that a smaller instrument will not sustain a retroverted womb. Under these circumstances one of our Canadian friend's instruments would perhaps answer. But I am sorry to differ with him also; he has bound his faith to the other extreme, and says this pessary is the all in all, the rock upon which to cast our sheet anchor and hold fast. If we cannot rectify malposition by means of a pessary, there is something beyond which we have not yet recognized, and if it is difficult to replace and retain the uterus, then our duty is to cure that something if we can; but if we cannot, we must do the best we can; but we cannot rely on these extra-vaginal pelvic supports to hold the uterus in position. I have seen cases where I have removed the largest sized Hodge pessary for retroversion, and relieved the malposition after a plastic operation had been made analogous to that for complete laceration of the perineum, or, in other words, after having dissected a sufficiency of mucous membrane so as to approximate the perineal aponeuroses and muscles so as to restore the vagina to its natural condition. With a properly adjusted pessary, then, a patient gets along very well. The rule for the introduction of a pessary is, that the instrument should conform as nearly as possible to the natural curvatures of the vagina, and it should be no longer than the distance from the horizontal ramus of the pubis just above the arch, to the posterior fornix of the vagina. In the ordinary sized woman this rarely exceeds two and a quarter inches. A pessary of this size follows the normal transpositions of the vagina coincident with the rise and fall of the abdominal contents during respiration. A large pessary keeps up hyperæmia of the vaginal mucous membrane and induces leucorrhœa, dysuria, vesical tenesmus, and may even prevent a discharge from the rectum or bladder.

Dr. WARNER. In speaking of pessaries, I may perhaps have been misunderstood. I am of the same opinion as Dr. Pallen, that in most all these cases there is something behind, and the success

n curing displacement is to cure the disease which causes displacement.

Dr. J. P. WHITE. After no inconsiderable experience in the treatment of these cases, I may simply say, that he who trusts entirely to cure by pessaries and supports of any kind will most certainly fail. Yet he who treats his patient without availing himself of such auxiliary instruments, will forego the use of a most important auxiliary. We might as well, by undertaking to say that a particular form of pessary is the most useful, undertake to say that a prolapse or retroversion depends upon the same. One woman who has tried to procure abortion requires a peculiar form of treatment, while another form of the disease wants a different mode of treatment and a different kind of support. Ordinarily the vagina is very much dilated, and ordinarily in flexions the uterus is too large and is sub-involved; the woman has aborted and the uterus has not returned to its pristine condition. In consequence, the uterus has tumbled over backwards or prolapsed into the vagina. Now, if there has been no enlargement of the vagina, she requires some form of pessary, but that won't cure. The pessary must be shifted, otherwise you will fail, no matter how good a pessary you may have. We attach too much importance to the kinds of pessaries to be used. I make a form of pessary, and have done for twenty years, and which I use immensely but not exclusively, made simply of cotton. If the uterus be retroverted I don't exclude a sound in replacing it. If I can replace it with my finger I do so; if not I use the sound, which is very useful, as all instruments are when properly used and used when required. I take this cotton pessary and dip it into glycerine, after I have scarified the vagina, after I have applied nitrate of silver, or anything which I deem it expedient to apply. If there is much enlargement of the vagina, I put into the glycerine a little tannin; and with the cylindrical speculum I press it up to the mouth of the uterus, or behind the uterus if it is in retroversion, and withdraw the speculum, push the wad back against the perineum if it is not lacerated (if lacerated, it requires different treatment), and I tell the woman to wear it there. But if I keep it there for twenty-four hours, it would distend the vagina; and I tell the female to draw it out and throw it away at night. In a case of retroversion I teach the woman to make the proper treatment; to introduce this cotton appliance, or medicate it as circumstances require. From time to time it is made a little smaller, so

as to give the vagina an opportunity of contracting. If I introduced in the same patient a good stiff pessary, and left it there expecting to effect a cure, my treatment would utterly fail. I endeavor to fit individual cases with a suitable support. If I can overcome the enlargement or the vaginal relaxation, I can soon dispense with my pessary, or any other that I may have used in the mean time. I do not know that any one else has used this pessary, but I know I originated it; and I have found it admirably adapted to certain cases. The patient sometimes has a distance to walk and cannot come back for daily dressing. With one of these pessaries she can in a considerable measure treat herself, greatly adding to her comfort. In regard to patients getting up and walking after lengthy periods of inability, I think it will be found not to be the result of any special virtue of our remedial measures, but owing to some impulsive influence. We tell them to get up and walk, and they do so.

Dr. BYFORD. I have so emphatically placed myself on record in regard to the use of pessaries that I hardly think it worth while to say much on the subject. We always require them as auxiliaries or substitutes in treatment; and I think no gentleman who has spoken to-day, who has considered the subject with any degree of scrutiny, thinks otherwise than that prolapse, retroversion, or any other displacement of the uterus, is a consequence of a pathological condition. Hence the disease upon which the displacement depends must be removed, or we do not get a permanent cure, however the pessary may retain the uterus in its proper place or correct the misplacement. For this reason, I have done pretty much as our friend here has done, discarded their use as a curative means, and used them only in such cases of extreme prolapse or other displacement as could not be corrected in any other way, or in any case where the patient would not permit me to make use of the curative measures necessary.

Now I almost invariably discard the pessary unless in exceptional instances. There are facts we cannot ignore in connection with these uterine diseases. Very often a patient has been unable to walk for a long period of time; and whether by spiritual aid, by the physician's assurance, or by the aid of the instrument, or altogether, she commences to walk. We cannot determine exactly how this comes about; but I know of instances where pessaries have been introduced to great advantage; and Dr. Hodge, who is unquestionably as honest a man as we have ever had in

the United States, in his treatment of women, and most skilful in the use of pessaries, could use half a dozen where another man could use but one If, as Dr. Scott says, his instrument is of service when we cannot get a chance to cure the inflammation upon which the disease depends, I think it is a good instrument.

Dr. SIMS. I am sorry to hear that my friend Dr. Miner discards pessaries under all circumstances and conditions. There are cases I do not know how he would treat if he did not use them, and he therefore must dismiss them as incurable for some one else to take in hand. We are not all mechanics, and it is not every one who can apply a pessary to individual cases. There are no two faces alike, neither are there two kidneys alike, of the same size and dimensions, nor any of the organs of two individuals alike. I believe there is the same difference between the vagina and the uterus and in their relations to each other, as there is in the roof of the mouth. It is absurd for a man to go to a dentist and ask for a set of teeth expecting to be fitted at once; measurement of the mouth must take place, and the teeth must be made to fit precisely. It requires the same nicety to adjust an instrument to the displacements of the uterus. I failed in this respect years ago oftener than I do to-day, yet to-day I fail repeatedly. Saturday last, I saw a case which I have had under treatment two months. I thought I had procured an instrument to suit precisely, but after being at home a week or ten days, the patient returned to say she was in great agony and had been since her last visit. I examined her condition, knowing that it was a big pelvis, an enormous vagina, and the uterus congested and inflamed. She told me that whilst at home she had gone about her domestic duties. The uterus was turned backward with the pessary in the vagina. It was retroflected, it did not descend into the pelvis, but it was lying over, and the pessary was making a pressure exactly at the centre of the os externum. I removed it and bent it to meet the peculiarities of the case. The uterus must not only be placed so that it bends over in the other direction, but the fundus must be thrown forward, so as to rest on the bladder and behind the pubic bones. If we fail to do that, in three cases out of four the uterus will gently bend backwards and curve over that part of the instrument that rests on the posterior wall of the vagina. I believe that Simpson's sound should not be used except as a probe. It is, except in the hands of those skilled in its use, an instrument of torture and great

danger; but with the instruments that are ordinarily used for replacing the uterus, no harm can possibly arise or danger ensue.

With regard to the use of pessaries, I may say that I never found an instrument bought in a shop that would fit given cases. We must have resort to the spirit lamp and mould the pessary into the requisite shape; and even then it is necessary for the physician to tell his patient to be examined next day. You find then that it makes a little pressure on the cervix; you may find the patient suffering from headache, not the headache of neuralgia or indigestion, but a headache caused by the mechanical pressure. And when you remove the instrument, if you pass your finger around, you will find that it has not pressed sufficiently up behind the neck of the uterus, but on the neck of the uterus, and you will find that an indentation exists, so susceptible to the touch that it is impossible to be deceived by it; and if you examine carefully and pull the uterus around you will see the indentation. It will take sometimes weeks to adapt an instrument perfectly to the individualities of a case. I may mention the case of a lady who was sent home the other day. She had consulted the best men in England, Paris, and New York. I found her with a low retroverted uterus, and she was so sensitive—the result of the pressure on the organ—that it was impossible almost to touch her. It was impossible to elevate the uterus, and I had to resort to an anæsthetic before it could be placed in proper position, using nitrous oxide gas because ether was disgusting to her. It was all of two months before I could adapt the instrument. I say it with shame and mortification, but it was impossible for me to do otherwise. I could recount to you a case of the same kind where mere mechanical treatment, with scarification by leeches and other means, by simply placing the uterus in its proper position, allowing the circulation to go on, and the absorption to take place, it was reduced to its normal condition in such a short space of time, that many would not believe me if the same thing had not occurred in their own practice. I insist that if gentlemen will adapt the instrument properly it will prove of great service. Where failures occur, it is the physician who fails and not the principles of the instrument. I have not discarded them, except where there is intolerance of the instrument. There are cases where patients cannot wear them. The spirit lamp is a great necessity. I had mine in use six times last Saturday making modifications of pessaries. Changes must occur in the uterus from time to time, and it is only

by experience, diligent study and research, we are able always to meet the individualities of a case.

Dr. MINER. My friends say they are sorry to disagree with me; I am very glad that I agree with them as fully as I do. Prof. White has shown us a pessary which scarcely ought to be called by that name. I did not design to say quite so strongly as that. I altogether, and under all circumstances, discarded the use of these instruments. I wanted to say in the ordinary treatment of almost all cases, it was generally practicable to get along without pessaries. We will have our hobbies; possibly mine is to get along without them. An immense amount of moral influence is brought to bear upon women, and if they have faith in their doctors, who may tell them a good story, they soon report themselves benefited by the use of an instrument or a mode of treatment. I do not know whether these benefits are real or imaginary. I don't think they are in one-half the cases or one out of ten. They are as a rule glad to get rid of this machinery, for I believe it is machinery. It is my opinion that the uterus rests upon the soft parts, even in an abnormal condition, more easily and with less irritation than upon the best pessaries ever submitted to the profession. I venture to say that this uterine machinery is a great deal less used to-day than it was ten years ago. I believe they are of use in extreme cases, but my convictions are very strong that the pessary business may be discarded in the great majority of cases.

Dr. WHITE. I omitted to express my thanks for the kindness and courtesy of Dr. Scott in bringing his instrument before the Association. There are good points connected with it, and I think I can avail myself of it occasionally. I do not always use the sound, but such a repositor as may be required. It is proper to add that mechanical means are sometimes necessary in addition to the finger.

Dr. SCOTT. I do not wish to be understood as thinking that pessaries alone will cure. I perfectly agree with Dr. White. What I claim as superior or beneficial in this pessary over Cutter's, is, that it can at any time be lengthened or shortened to any size. When a pessary is necessary, this one, being composed of soft rubber and of easy introduction, possesses advantages over the others; it does not press harshly upon the parts. It is only when an instrument is necessary that I use one. We must treat symptoms as well as positions.

Dr. DIDAMA, of Syracuse. I am a little surprised at the re-

marks of the gentleman in front of me—that the pessary is given up to a great extent by the profession. I wonder if that statement is correct. I know that a few years ago the pendulum swung very freely in the direction of pessaries, and our chief business was in removing them from cases. So far as my experience is concerned, I may state that in my neighborhood we do use pessaries pretty often and find in a great many cases they are needed besides the treatment; though if the uterus is placed in proper position and kept there the patient gets well without anything else. Sometimes the continuance of this malposition of the uterus is the cause of the enlargement and all the difficulty. I would like to ask Dr. Sims if the use of the pessary is defunct; if it is true that only one is used now where ten were used some years ago.

Dr. SIMS. On the contrary, where we used one ten years ago, we use twenty now. One manufacturer tells me that he can hardly supply the demand.

Dr. MORRIS, of Baltimore. I can give an instance of a manufacturer who reports that he cannot sell them at all now as compared with the demand some years ago. I have not used one for ten years; and I think Dr. Sims must have changed his views on this matter. The only one I have used is that of Dr. White, as well as the medicated cotton. I agree entirely with Dr. Miner's view on this question. I am preparing a paper which I intend to publish endeavoring to show in what way pessaries are useless and injurious. In these cases, as Dr. Miner has said, you must remove the cause whatever it may be, and then you remove all necessity for the use of pessaries. With regard to the use of the sound, I would like to hear Dr. Sims further on that point. The entire faculty of England use it. Perhaps in the hands of an awkward man it may prove a painful instrument, but I do not think it can be a dangerous one. I should like an explanation from Dr. Sims; I have no doubt his plan is the better one.

Dr. SIMS. I know at least one case of death from penetration of the uterus that occurred some years ago from the use of the sound. And I have also known of cases replaced by the sound where the sufferings were awful, and in the hands of skilful men too. The elevator, in my opinion, is the better appliance, the point of which does not touch the fundus of the uterus and never scrapes on the walls. I have never failed with that when, instead of turning the uterus around in a circle within the pelvis, I have elevated

it in a right line. We have learned a great many things of value from the English, but they have still to learn many things from us.

Dr. WHITE. In relation to the sound I beg to say that it may be made perfectly harmless by being constructed of flexible silver which is as soft and as pliable as lead. I have often used such a sound, and the inconvenience was so small that the patient was ignorant I had done so. I recommend its use where convenient, otherwise the instrument mentioned by Dr. Sims should be employed.

Dr. STOPPER, of Port Huron. I have used Simpson's sound very frequently in assisting to restore retroflexed uteri. But when the fundus has fallen down into the cul-de-sac, I have been in the habit of elevating it by pressing the body of the sound against the anterior portion of the uterus and lifting it out of its fixed position, etc. In one instance in attempting to do that, my patient suffered so intensely that I became alarmed lest she would die. Since then I have been using something like Dr. Sims's. I would like to ask Dr. Sims if he has not found cases where the retroflexion was so long continued that the absorption at the flexion is not so great that it is impossible entirely to restore the uterus to the normal condition; if in raising the fundus, the os does not sweep along backwards, although the uterus has been placed in its normal position. This has been my own experience.

Dr. SIMS. There is but one thing that will prevent a restoration of a retroflexed uterus, when we find adhesions between the uterus and rectum, but with the uterine elevator the uterus is thrust forward, and when the elevator is removed the finger rests in the cul-de-sac, and with the other hand placed on the abdominal wall, the fundus of the uterus is brought forward until we feel it rests upon the pubes. There is no danger in placing the organ. Adhesions exist much oftener than we supposed they did many years ago. I have given my experience on this point, and from the instances I remember, I think it is utterly impossible to bring the uterus up behind if bound down by adhesions. These are the classes of cases in which I expect to receive some benefit from the instrument of my Canadian friend. I take this opportunity of moving that a vote of thanks be returned to Dr. Scott for his kindness and courtesy in bringing his pessary forward and placing it at the disposal of the Association, and inaugurating this discussion. I intend to take one with me to New York, and endeavor to have another constructed so as to avoid the bad smell.

Dr. WHITE. I beg to second the motion.

The motion was then put by the chairman and carried unanimously. After which the Section adjourned until 2.30 P. M., Thursday, June 4.

THURSDAY, JUNE 4TH.

In the absence of Dr. PARVIN, Dr. J. P. WHITE took the chair, and Dr. BUSEY, of Washington, D. C., acted as secretary in the absence of Dr. PALLEN.

CHAIRMAN. We might as well dispose of the paper read by Dr. Parvin this morning, during his absence. It will be quite as pleasing to him if we do so.

Dr. OCTERLONY, of Kentucky. I move that the paper in question be referred to the Publishing Committee, with a recommendation to publish it.

This was duly seconded and unanimously carried.

Dr. BUTTERMORE, of Pennsylvania. I now move that the thanks of this Section be tendered to the doctor for his valuable paper.

Dr. OCTERLONY seconded the motion, which, upon being put, was also carried unanimously.

SUPPOSITORIES.

Dr. HEARD, of Texas. In presenting this apparatus for the introduction of suppositories into the cavity of the cervix and body of the uterus (showing a suppository of glycerin and tannin encased in tinfoil), I am aware that it is merely an application of principles that probably every one agreed with. If the os uteri is not sufficiently dilated the suppository is introduced with a small piece of cord attached, as tannin becomes very adhesive. I introduce it very readily into the os by inserting the end of this pen point (holding up one) into the cork, and as soon as it is softened I withdraw the cork. I do not speak of this to the exclusion of other remedies. I have had experience in the treatment of such diseases, and I have had more satisfaction with this when conjoined with the other treatment than with any other resorted to.

Dr. BARTLETT, of Wisconsin. As the doctor says, there is nothing new in this suppository; but under similar circumstances I like it better than any other application I ever made. My first reason is that you can regulate the amount exactly, and apply just

as you wish, and after filling the syringe you can carry it to the fundus of the uterus before discharging the fluid upon the cotton which is the recipient. It may be a matter of personal taste, but I have used it a great deal, and have had better satisfaction with it than with any other material introduced.

Dr. OCTERLONY. How does the doctor introduce the suppository; is it by means of the speculum or without? If without, I think the procedure is radically defective, for it is necessary in these cases always to precede the local application by the use of some measures calculated to remove abnormal secretions from the cervical canal and from the cavity of the uterus. I have been in the habit of using suppositories composed of most astringents, which I have introduced with the speculum. They are perfectly solid and manageable at ordinary temperatures, and can be introduced with great facility.

Dr. HEARD. I always use a speculum when introducing anything into the cavity of the cervix; an ordinary cylindrical speculum sometimes. In many instances I have used other suppositories, but I have not experienced the benefit from them that I have from the one I bring forward to-day.

No action was taken by the Section, and the subject dropped.

Dr. PALLEN, the Secretary, here resumed the duties of his office.

TRANSFUSION.

Dr. PARVIN. I wish, as a supplement to the address I read this morning, to call the attention of the Section to two instruments for transfusion. I did not wish to take up the time of the Association this morning, and thought the matter would be particularly interesting to the members of this Section. This (holding up the instrument) is Aveling's apparatus for immediate transfusion, which has been used successfully in England in post-partum hemorrhage. I do not find the record of a single case of uterine hemorrhage treated successfully by transfusion in this country. I have written to several physicians to ascertain if they knew of any case, and they replied that not a single case was known to them. There possibly may have been such cases, and if so, I would be glad to be informed of them. In Great Britain numerous cases of successful transfusion have occurred. Higginson, the inventor of the syringe known by his name, has had fifteen cases, in ten of which recovery took place. Dr. Parvin proceeded to describe the

apparatus, showing the mode of application, and pointing out the distinctive features and advantages in both Aveling's and Leiter's instruments. The former is an India-rubber tube, with a bulb in the centre for the purpose of exhausting the air and giving motion to the blood if necessary; the latter is much more complicated, a lancet working within a tube attached to the arm of the blood donor with a strap, over which a small pump is placed. The receptacle of the pump is filled with water in order to completely exhaust the air before the blood is transferred to the recipient, etc.

Dr. LILLEY, of New Jersey. Dr. Parvin has said he knows of no case of successful transfusion in this country. I was very much interested in reading, two or three weeks ago, in a paper of the Proceedings of the Pennsylvania State Medical Society, the report of a case. I am acquainted with the operator, Dr. Junkin, and the operation struck me as being an exceedingly ingenious one. The doctor was sent for to visit a woman five miles from where he resides, and on arrival he found her flooding. He believed that transfusion was the only thing to save her. He had no apparatus, and five miles was too far to send. He asked the husband what there were in the house in the shape of medical instruments, and was furnished with a female syringe with a bulb. Remembering that glass would melt, he thrust it into the fire and soon succeeded in drawing it out into a tube. The husband presented his arm for the operation, and the doctor filled the syringe; then, opening a vein in the woman's arm, injected two or three ounces of blood, and she recovered.

Dr. BYFORD. Transfusion is eliciting a great deal more attention recently in this country and in Europe than heretofore, and I look upon its revival as one of the most promising circumstances in connection with those great laws we are attempting to bring forward. I am glad that Dr. Parvin has brought the subject so prominently before the profession. His labors have already borne fruit, for we have just heard one case reported; and I have no doubt there will be more reports as soon as his paper is published. Of the instruments exhibited, I perceive that Aveling's is the most simple; but the other is very ingenious and complete.

Dr. THORPE, of Ohio. I would like to inquire, in regard to Aveling's instrument, how you know the quantity of blood thrown in.

Dr. PARVIN. You can approximate it by knowing the amount that the bulb will hold.

Dr. THORPE. A further idea occurs to me. When inserting the pipe into the vein of a strong man no pump is necessary. The velocity with which the blood comes from the arm would of necessity flow into the arm of the recipient without other propelling force.

Dr. OCTERLONY. Venesection is so simple an operation that you can hold the vein with one hand, and regulate the cut of the lancet with the other. But with the instrument before us (Leiter's) it is a sort of mechanical process, which I consider to be a radical defect. Possibly Dr. Parvin may be able to say something in favor of the instrument, but the feature I have pointed out seems decidedly objectionable.

Dr. PARVIN having taken the chair—

Dr. S. P. WHITE. The students have been practising transfusion, from a big dog to a little dog and back again, by means of a simple tube of India-rubber with glass points; and Dr. Thorp's remarks strike me with a great deal of force—that the natural velocity or circulation of the blood of one animal is sufficient to carry it into the veins of another. But there seems to me to be an additional advantage in this little bulb (holding up Aveling's apparatus), for, if the blood be sluggish, by making compression you can impart activity. The bulb enables you to push it forward; you may insert the tube at any point, and estimate with considerable accuracy the amount of blood passing through it. The experiments in transfusion caused a great deal of merriment in the class last winter. They bled one dog to death, and after he had made his last kick, they took the blood from the other and put it back, when he revived and went about his business. I cannot throw any new light on the subject. It is of great gravity; and I hope that the gentlemen who make the report next year will be able to chronicle great progress in transfusion. It is now receiving great attention in Europe, and the whole English mind is working on the subject. We have been a little tardy on this subject. In all uterine hemorrhages we have nothing that will compare with successful transfusion, which is effective without any medication, without resort to intra-uterine injections, which are always objectionable. I hope the subject will be studied so that it may be made still more valuable; and I hope the apparatus may be made so simple that any practitioner may be able to resort to transfusion. All such instruments should be simple, and able to use without preparation. This little apparatus of Dr. Parvin

(Aveling's) you can easily put into the pocket; but a simple India-rubber tube with points is still more easily carried. Hemorrhage is likely to occur at any time, and comes on when we are unprepared, and cannot send for apparatus. I trust the American members of the profession will not be behindhand in furnishing their quota in this great race of progress.

Dr. BUSEY. The advantage of the bulb in Aveling's apparatus is in entirely exhausting the air; a perfectly straight tube will not do that. By inserting this point (holding up the instrument) into the vein of the recipient, and the other into the vein of the donor, you exhaust the water previously put in, and, by turning the stop-cock, the blood is ready for use.

Dr. WHITE again explained the mode of operating on the dogs.

Dr. BUSEY. There is another advantage. If the flow is sluggish, velocity can be added by compressing the bulb. I would just call attention to the fact that a friend of mine two years ago published a paper on transfusion of all the cases reported throughout the world, in the *Louisville Journal.*

Dr. BARTLETT. I would merely suggest that the difference between English and American practice is owing to the time of the transfusion, or to the conditions of the patient. Sometimes a patient might recover without transfusion, and unless the conditions are accurately stated we cannot assume the success of the operation. Transfusion does not produce contraction of the uterus, it merely sustains the progress of the patient. I throw out this suggestion as a clue to the statement made regarding the difference between English and American practice. Unless we know the exact conditions of the patient at the time of the operation we cannot assume success.

Dr. WHITE. I move that Dr. Parvin be requested to write out an account of the apparatus, and the substance of his valuable remarks, and that they be published.

Dr. WARNER. I would amend the motion as follows: That by the request of the Section the Secretary make out a full report, and submit it to the Section next year. He will have plenty of time to do that.

Dr. WHITE. I cannot accept the amendment. We shall hear from Dr. Byford next year. We want this to-day, or as soon as we can have it published. We better have it done this year.

The motion having been duly seconded, it was carried unanimously.

The Chairman then suggested that a committee of three gentlemen be appointed to prepare special business for this Section at the next annual meeting of the Association. At the first session of the Section there was a great deficiency of material to work upon. Half a dozen papers, at least, ought to be prepared by those best qualified for the purpose, so that members would know what to expect in advance. The committee would select gentlemen to prepare papers, and its report could be embodied in the *résumé* which the Secretary had to present to the Association on the following day.

This suggestion was, after a short discussion, adopted; and Drs. Pallen, Warner, and Bartlett, were constituted the committee.

OVARIOTOMY.

The question of Ovariotomy was then taken up by the Section.

Dr. DUNLAP, by request, opened the subject. I came here this afternoon for the purpose of learning more definitely concerning Dr. Miner's operation. I am very sorry he has had to go away without an opportunity of explaining it. My own impression is that it is one of the finest operations I have ever seen or known to be made. I like it very much; and I am very sorry Dr. Miner is not here to enlighten us more on the subject. In conversation with him, he appeared to contend that it was entirely within the scope of any operation that might of necessity be performed, and that it might be successful. I would differ with him in that respect, for I have tried it in several cases. In one case I entirely failed. I was very anxious to have the pedicle elongated, but the little sacs that come right down in front of the pedicle were so thin they broke up, and I had to give up the process. In the other case I elongated the pedicle very much, so that I could take it out and bind it up after ligating it in the lower end of the wound, in accordance with my plan of operating which I published fully in 1868, with a report of the cases I had operated on. I have never used the clamp, and am somewhat prejudiced against it, because in a number of these operations I do not think it can be used with any advantage; and would certainly, in a large number of cases, be in my hands injurious to the patient—the pedicle being so short that you could not bring the end and the clamp outside of the walls of the abdomen without putting it on the stretch—and as I have always been in the habit of using ligatures, ligating the

pedicle and letting it drop back into the pelvic cavity, I have never felt like trying to use it. It is, perhaps, only a prejudiced objection on account of the success I have already obtained by the use of ligatures. In three or four of my cases, I may state, it would have been impossible to use clamps. The pedicle had to be cut down so short that I could not even use the ordinary ligatures. The important point, I think, in the operation is the cleansing out of the cavity of the abdomen. There is no difficulty in getting the fluids out; but the hardest of it with me is the cleaning out of the cavity of the abdomen after the flow of blood is entirely stopped. Merely sponging will not do; it wants to be cleansed until almost thoroughly dry; because if you leave any of the peritoneal fluid in there, you are almost certain to have septicæmia. Several of my patients have come from under the influence of chloroform in a satisfactory manner; but in twenty-four, thirty-six, or forty-eight hours afterwards I have found them sinking. I could scarcely tell what was the matter; the pulse got feebler and feebler, and they sank and died. At length one of my patients seemed to be going on in that way, and I thought I had not thoroughly cleansed out the cavity of the abdomen, and in moving the ligature a gush of bloody serum came out, and the patient was relieved. That gush saved her life; and it taught me a lesson. As an illustration of the great importance of that, I may relate the experience of a gentleman who operated upon a woman in Ohio, about six weeks ago. He closed up the wound without cleaning out the cavity of the abdomen at all; and he left the case in the care of another physician, who, during that night, assisted the patient on to a vessel three times to urinate. The third time the dressing gave way at the lower part of the incision, and nearly a chamberful of bloody serum passed away from her. She is now living, that having saved her life. If it had remained, there would have been no hope of her recovery. As to those drainage tubes passed down into the cul-de-sac to the posterior wall of the vagina, I have never used them, and can say but little about them; I have been a little fearful about them. Unless the tube was confined within the vagina so that no air could pass up into the cavity of the abdomen, I cannot see that there is any great advantage in them; and it appears to me that if the cavity of the abdomen is thoroughly cleaned out, it does away with the necessity of putting it there. In cases where there have been large amounts of secretion in the cavity of the abdomen, I do not know, but hardly

think the drainage tube would be able to carry it out; because the cul-de-sac is filled up with intestine. Moreover, it is a source of irritation. I do not like giving up the old plan of ligature, bringing out the ligatures at the lower end, which forms the best channel for drainage; and when the abdomen is cleaned out I do not think it would be justifiable to put in a tube; some accidents have happened in passing the tube. I was told of a good operator who passed it through the bladder.

CHAIRMAN. How many cases have you operated on, Dr. Dunlap?

Dr. DUNLAP. I have operated on eighty-nine, with the loss of eighteen (loud applause). The greatest success I ever had was during the year 1873, when I operated in sixteen cases, with the loss of two; I operated in fifteen, with the loss of one, and the sixteenth died. This year I have had five cases and lost two. One died under the influence of chloroform; she was in a nervous, strange condition, and was just as sensible under it as if it had not been administered. It made her almost crazed.

Dr. SIMS. Did you make post-mortems in the last two cases?

Dr. DUNLAP. No, sir.

A MEMBER. What chloroform do you use—pure or mixed?

Dr. DUNLAP. I used to use chloroform entirely; afterwards I used chloroform and ether for a while, giving a pretty good dose of whisky punch before commencing, and then for some considerable time the ether. Now I use the alcohol ether of chloroform, 1, 2, 3, as described in the formula, and I like it very much. It quiets the patient, and there is less vomiting under its influence than with the others.

Dr. SIMS. I have a great deal to take back on the subject of ovariotomy; but as I believe we all work for the truth, I am not ashamed to acknowledge any fault or mistakes I have made; and if I have misled any by my publications on the subject, I am glad of this early opportunity of putting myself right, and stating what I conceive to be wrong. In regard to the pathology or manner of death in ovariotomy, I see no reason to change the views expressed in my publications on the subject. I believe the rule is that patients die—not often, but sometimes, from hemorrhage, rarely from peritonitis, almost universally from septicæmia. And this septicæmia proceeds from the retention of bloody serum in the peritoneal cavity. From the remarks made by my friend, Dr. Dunlap, I am induced to believe that this disease occurs every-

where; whether in the east, west, north, or south. It does not depend upon any location or climatic influence. Dr. Dunlap has related two instances where life has been saved by the accidental drainage of red serum, which, if retained in the cavity of the abdomen, would have resulted in the death of the patients. I have seen lately two cases of death from pure peritonitis. We have had an epidemic of puerperal peritonitis in New York during the last year; numbers were under treatment, and we lost some of the finest women our city could boast of; and when that is the case, any operations involving more or less risk had to be put off. About the first of April, Dr. Thomas operated upon a case that urgently demanded his interference, and the patient died in the course of thirty-six or forty-eight hours afterwards. He was followed by Dr. Emmett, who operated in a case very favorable to success, and this patient died. Dr. Emmett also had the fortitude to try another operation, and this patient also died. I took warning by this, and put off my cases until the fall. The same epidemic has existed since then to the present time; and I made no operations during the spring, unless they were cases that could not be put off to the fall. Four weeks ago I had an urgent case, which could not be put off, and I concluded to perform the operation. The case was not a favorable one; when we operated we knew that; and to my great mortification and disappointment my patient died at the end of four days. The post-mortem examination revealed the fact that it was peritonitis. Drs. Peaslee, Thomas, and myself invariably use a drainage tube of some shape or form. The cavity was drained thoroughly in the first five hours, but as the patient began to get worse we thought some red serum was retained. We threw carbolic water, and then simple water in, and it returned just as thrown in. When we came to examine the cause of death, it was peritonitis, and I have seen twenty post-mortems, the first case of pure and uncomplicated peritonitis I had ever seen.

About two weeks ago Dr. Thomas performed an operation in a case very favorably constituted for success. The patient was of middle age, good morals, and the tumor very small. She begged for the operation, and dreaded to wait for it to mature. When she was brought into the room, the consulting board was asked its opinion about the operation. Dr. Peaslee said he would never operate on a case where the tumor is small. I took an opposite view, and said "perform without reference to the size of the tumor." Dr. Thomas and myself being a majority over Dr. Peaslee, he per-

formed the operation. When it was finished, Dr. Thomas said, "If this case does not get well, we can never promise the success of any operation, as everything is favorable." The patient died on the fourth day. On the second day she began to sink; the temperature went up; the pulse became more rapid, and vomiting set in. The post-mortem examination showed the second case also to be pure peritonitis. In my publications I have said they never die of that. I don't see why they should not die of it now and then in an atmosphere as poisonous as that of New York. But, notwithstanding this exception to the rule laid down, I believe the mortality depends upon septicæmia, and that septicæmia depends upon the retention of bloody serum in the cavity; and we should fix some way by which this poisonous fluid can escape from the peritoneal cavity. With regard to the drainage tubes, one of the great masters, who stands equal with our friend here (Dr. Dunlap), was among the first to establish the system of drainage tubes, but he tried drainage from the cul-de-sac of the vagina and rejected it long ago. I thought it the best plan. He made a drainage from the upper part, and I am convinced now that it is not at all necessary to make a puncture in the cul-de-sac of the vagina. The experience of Dr. Thomas, of New York, goes to prove that drainage from the lower end of the abdominal walls is just as efficient as in the cul-de-sac, and he simply introduces a glass tube which rests in the lower end of the external wound, and passes down behind the uterus to the very bottom of the cul-de-sac, and as soon as any fluid is present it comes away; you can test the condition by running anything in that will wet it. Then if you find any fluid there, all you have to do is to pass an elastic catheter, and pump water into the cavity, and then by pressure upon the abdominal walls and intestines the fluid is soon ejected. Dr. Thomas's experience proves this to be efficient, and there is no difficulty in the operation.

It is very difficult to puncture the cul-de-sac of the vagina, and another objection I have found to this method is, that the tube does not drain the flow at the bottom; that there is a level below the level of the puncture, sometimes three or four inches, which might retain some fluid; and I have found by post-mortem examination that two ounces have been retained. Now I have no doubt that half an ounce, nay, even half a drachm, of bloody serum is sufficient to cause death. I, therefore, take back that mistake; but it was not a mistake, it answers every purpose under certain con-

ditions. My friend (Dr. Dunlap) has spoken of sponging out the cavity. Well, he may sponge it out, that is right and proper; but he has related a case of a whole quart or more of red serum coming away after that was done. That, in my opinion, was not left in the peritoneal cavity; I have no doubt that it was sponged perfectly dry. But there were adhesions everywhere, and when covered up there was a little exudation of blood taking place from the broken surface. Here is an argument for the introduction of some drainage material, so that as soon as any secretion is formed it shall pass away without any danger of being retained. A short time ago I assisted one of my pupils in an operation. I said to him, "Let us try Dr. Thomas's plan; there may be adhesions everywhere, and we will have the red serum; clean the cavity out as well as you can." There was no bloody serum, no indications of the presence of any; but there was a large surface disrupted that had to adhere to some point, or had to heal in some way. In five days there were large exudations of serum, indeed my pupil calculated it in enormous quantities, and he could not tell what it was. It becomes a question whether we should put a tube there in all instances. I do not say we should not; it is perfectly harmless, and in cases of this class is of immense service. If there is no serum, the wound soon closes up; and if there have been adhesions which must be broken up, then drainage is the wisest and safest plan, and that drainage is efficiently and easily effected by Dr. Thomas's tube. In regard to the pedicle, you will remember that not long since I advocated tying and dropping it back into the peritoneal cavity. I insisted on tying it with silver wire, on the theoretical ground that it became encapsulated and remained there innocuous forever. It is curious how changes occur in these matters, and the degree of success which follows. I performed eleven operations in that way, and lost one patient which had been secured by silver wire. From this experience and partly from the experience of Dr. Emmett, of the Woman's Hospital, I lost faith in this method. I take all back I have said on the subject without reservation; I do not think the pedicle should be secured by silver wire or any other wire. Not long ago I lost a patient with hemorrhage, who ought not to have died. When I came to make a post-mortem examination I found the wire was not twisted tight enough to keep the bloodvessels in control. Dr. Emmett lost a case entirely in the same way, and Dr. Wiley tells me Dr. Emmett lost another case also in that way which he did not see. Now if I have lost one

patient by hemorrhage from the use of the silver wire, and both of us together have lost three, the mortality is immense. As we have operated fifty times, it makes six per cent. Suppose we have lost six cases between us, and three of these died from hemorrhage, owing to the imperfection of the silver wire, the mortality is so great that we must not use it to secure the pedicle. Say, if we lost three cases out of twenty, and if hemorrhage and death occur in the hands of Dr. Emmett, who lives, swears, and moves by the silver wire, what might be the result with the rest of us not so familar with it? Therefore, I give up the silver wire; and however honestly and earnestly I advocated it, I just as honestly and earnestly retract what I said. I shall insist hereafter upon its disuse (applause). With all due deference to my friend here (Dr. Dunlap), I do not think the pedicle should be ligated at all. If he has achieved such a success with such a method, I believe he would achieve a still greater success if in some degree he modified the operation. I do not believe the ligature should be used in any instance. Every case that dies in the Woman's Hospital is subjected to post-mortem examination, and my opinion is based upon the result of these examinations. We make no secret of this; and it is nothing but just that the patient who has the benefit of our attendance and treatment, should repay us by the use of her body to search out means for the relief of humanity (loud applause). But in regard to the ligature, I would not use any whatever. If I had this misfortune with silver wire, I gave it up immediately; I am not so wedded to theoretical views that I advocate them when I find them to be wrong. In performing an operation last winter, after I had given up the silver wire and adopted the plan of tying the pedicle, I tied one-half with a fish-line and the other with a little fiddle string, on the principle that it would be absorbed by and by. Well, the patient died, and when we came to inquire into the cause of death, we found there was a sloughing of the pedicle from the tightness with which the ligature had been drawn. Determined not to leave hemorrhage, I had drawn it so tight that it had killed the stump, which mortified. I had a case of death from the same cause in which the silver wire was used. I had drawn it so tight that it killed the end of the stump, and the decomposition of that end produced a slight degree of inflammation which resulted in the death of the patient. And I saw another case the other day which, when examined, showed the pedicle to be in a state of decomposition from the tightness of the ligature. Again,

only the other day, where a patient had died of peritonitis, we found that the stump had been tied with a double ligature and was mortifying. Who knows whether the mortification was the cause of the peritonitis? It is a serious thing—four cases where the end of the stump has sloughed from the stricture of the ligature. I am now opposed to any ligature of the stump whatever.

The improvement of Dr. Miner, of Buffalo, is a good thing. I refer to the enucleation. It is not always a bloodless operation, for I have seen cases where there was bleeding from the tumor, and therefore we cannot say whether separating the pedicle from the tumor is going to be a success. Then how will we fasten the pedicle? I have certainly railed against the clampists as much as any man dared to do without making them ridiculous. But now I take all back and acknowledge myself a clampist; and I do it, knowing that I am in the way of advocating the truth. But, as my friend has told you, every case cannot be clamped. Then what are you going to do with such cases? I think there are but two things to do. First, to bring the pedicle out without stretching it, and secure it externally so that there will be no danger from sloughing. But suppose you cannot get it outside? What are we to do? Many years ago Dr. Baker Brown introduced a method of cauterization of the pedicle which struck me with a great deal of force; and in Paris I operated on a patient and adopted the cauterization of the pedicle, and failed. When I came to examine I found out that I had failed because of the hemorrhage, and I gave up cauterization. But Dr. Meadows, of London, one of the leading surgeons to Soho Hospital, has resuscitated the plan of Baker Brown of cauterization, and his success has been very remarkable, very wonderful. We can only do two things with the pedicle if we do the very least that can be done in the interest of the patient—either to secure it externally, or, if impossible to do that, to use the cautery; whether we use the actual cautery by heated iron, or the electric cautery, is a matter of indifference. That it is safe, I am perfectly satisfied. It requires a little longer time; but it should never be performed against time. Next in regard to clamps. There are lots of clamps before us, expensive things, and, as they have to be screwed up in three or four different directions, difficult to manage; it has occurred to me to use a simple, plain iron wire, to bring it round the pedicle and screw it up with a little écraseur. I have tried it in New York several times, and it answers beautifully. This is my invention and it is not my invention; I put it in execution in New York

without having heard of anything like it. I went to Dr. Thomas and explained it to him, and he told me that it was one of the nicest things he knew of; and he reached down Péan's book, and showed me there an exact drawing of it and the whole machinery as I have shown it to you. It is therefore Péan's method, and not mine (loud applause). I don't know that I have anything else to take back, or anything to add. I have been as brief and as rapid as I could, so as not to take up much of your valuable time; and I am thankful for the attention with which you have received my few remarks.

Dr. DUNLAP. In speaking of the advantages that Dr. Sims has mentioned of the plan of clamping, I would like to remark that this is where the difficulty suggests itself to me. It certainly does elongate the pedicle and gives you a chance to bring some portions of it out; but where it is a short pedicle and there is not room enough to bring it out I do not see how it can be applied. [The doctor then illustrated his meaning, showing the difficulties in the clamping system in such cases.]

Dr. SIMS. My friend has forgotten that in the case of a short pedicle we must use the cautery. We never clamp a case like that.

Dr. DUNLAP. Then if the pedicle is long enough to come out, there is no need of it whatever? I have no objection to that. In the short pedicle there is another course to be pursued, which I think would be the safest course. I would have the membrane spread out so as to see the bloodvessels, and take each one at a time; and then all the dangers Dr. Sims speaks of, of sloughing at the end of the stump, would disappear. Where the pedicle is short and you have tied up each artery separately, I do not think you will find more than two that need ligating; and very likely those arteries will be long enough to come out so that they can be brought up by the ligature and not passed into the cavity at all. I should be a little fearful of cauterizing. It may be all right in the hospital, but in private practice the friends of the patient would not like to see a red-hot iron applied to her bowels, and would be alarmed. I think a safer plan than cauterization is ligature; you will find that the bloodvessels can be ligated so that the ligature need not pass inside at all. Dr. Sims spoke of putting off his patients to the fall of the year. The most successful month in the year, I think, is August. At first I used to put off my patients, but I try to get them as much in the spring of the year as I can, which I thought most favorable. In the fall here there is a little

malarious influence which I am a little fearful of, and I prefer the spring on account of that. But a number of cases cannot be put off, and I have operated in the heat of the summer. I dread more the months of December, January, and February than any other months in the year, but in August and July I have no hesitation if the patient is ready for the operation, and would as soon operate then as in May. The doctor spoke of another point that I would differ in. It is an honest difference of opinion; he may be right and I may be wrong. It is in performing an operation when a tumor is small. Now, I cannot agree with that; and my reason for not operating when the tumor is small is, that if it is non-adherent it is not likely to become a source of trouble. The cavity of the abdomen is made in such a form as to contain a tumor without any inconvenience to a woman. She may be in perfect health, and it is much safer for that woman to have the peritoneum undisturbed. One of these small tumors operated on is more likely to cause inflammatory action than a tumor of larger growth; and I think it wise to defer such operations if the tumor is less than twelve or sixteen pounds.

The Committee appointed to report papers for the next year, consisting of Drs. PALLEN, WARNER, and BARTLETT, suggested the following:—

On Unusual Fœtal Presentations, by Dr. J. A. OCTERLONY, of Louisville, Ky.

On Retroversion of the Uterus in the First Four Months of Pregnancy, by Dr. HEATON, of Detroit, Mich.

On the Connection of the Hepatic Circulation with Uterine Hyperæmias, Fluxions, Congestions, and Inflammations, by Dr. L. F. WARNER, of Boston, Mass.

On the Relation of Menstruation during Lactation to Rachitis, by Dr. S. C. BUSEY, of Washington, D. C.

The Section then adjourned *sine die*.

MONTROSE A. PALLEN, M.D.,
Secretary.

THEOPHILUS PARVIN, M.D.,
Chairman.

ADDRESS IN OBSTETRICS, DISEASES OF WOMEN AND CHILDREN.

By THEOPHILUS PARVIN, M.D.,
OF INDIANAPOLIS, IND.

In making *Uterine Hemorrhage* my subject, I trust the spirit, though not the letter, of the law instituting these addresses will be fulfilled. The letter of that law demands a chronicle, an abstract of all the discoveries and advances that have been made during the twelve months immediately preceding, in the three departments of practical medicine which this Section includes. But, in addition to the inherent difficulties of such a labor—collection, connection, and condensation—evolving completeness and harmony from isolated, sometimes apparent, sometimes discordant facts, making of these *disjecta membra* a living unity such as uttered words should be; even were its performance possible by me, it would be a most uncongenial work, and its attempt an unwarrantable assumption of your ignorance of current medical literature.

In considering the subject announced, a subject which at once includes the two major and naturally connected departments of the Section, some of the most important therapeutic questions now occupying the professional mind will necessarily be presented.

Regarded in its anatomical relation, *uterine hemorrhage* may be divided into *interstitial*, *peritoneal*, and *mucous*.

Hemorrhage into the tissues of the uterus, as a rule, according to Klob,[1] occurs only in aged females; while Dr. Graily Hewitt[2] speaks of it as an occasional event in parturition. Cruveilhier,[3] under the title of *apoplexy* of the uterus, describes it fully, making three divisions of it according to the muscular layers affected, its

[1] Pathological Anatomy of the Female Sexual Organs.
[2] Transactions of the London Obstetrical Society, vol. ix.
[3] Anatomie Pathologique.

cause generally being degeneration of the arteries; while the hemorrhage to which Dr. Hewitt refers is properly an ecchymosis.

In certain dyscrasiæ too, hemorrhage into the substance of the uterus may occur, and this independent of the arterial degeneration mentioned, or of violence.

But this variety of hemorrhage is of interest only to the pathologist, and we pass on to the second, *peritoneal.*

Three forms of peritoneal uterine hemorrhage will be at once conceded, viz.: *traumatic*, and *two consequent upon inflammation*, the one an immediate, the other a remote result. Mentioning the first is sufficient, for the cause is obvious, and the consequence frequently demonstrated.

Acute inflammation may cause hemorrhage. Dr. Barnes remarks,[1] "Whatever produces hyperæmia predisposes to hemorrhage. Thus inflammation takes a high rank as a cause of hemorrhage." And Dr. Druitt, in his article upon *inflammation*, observes,[2] "There is no severe inflammation which may not be attended with hemorrhage." Hence inflammatory congestion of the pelvic peritoneum, that which invests the uterus included, may thus directly cause hemorrhage. Virchow, *Pathology of Tumors*, remarks that in consequence of inflammatory processes in the pelvic cavity there results a pathological vascularization; and extravasation may occur from the false membranes of retro-uterine peritonitis. In this we have an illustration of the process by which hemorrhage is the remote consequence of inflammation. Further, Desprez,[3] explaining the way in which hemorrhages may occur after inflammation of serous membranes, remarks that under a renewal of the inflammatory process, the neo-membranous formations soften, and the newly-formed vessels thus losing their supporting investment either ulcerate or otherwise are unable to resist the interior pressure of the blood.

Furthermore, can we recognize as actual or possible an acute exhalation of blood from the pelvic peritoneum, as some of the observations of Voisin would seem to show, though such an origin of uterine hæmatocele is regarded by Bernutz[4] as altogether problematical? Knowing how many and how various, so far as structure and function are concerned, the tissues and organs that are the avenues for vicarious menstruation, there does not seem

[1] Diseases of Women. [2] Cooper's Surgical Dictionary.
[3] Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques, vol. xvii.
[4] Nouveau Dictionnarie—article, Hematocele.

any antecedent improbability in the supposition that the pelvic serous membrane, and especially its uterine portion, might be such an avenue.

Still more—connected with the suggestion just made—as to a possible cause of uterine hæmatocele, may not such an effusion have its origin in malarial poisoning? Certainly a case under my observation a few months since seemed to have such poisoning as a factor, I will not say the factor, in its production. If uterine hæmatocele may be caused by lumbo-abdominal neuralgia,[1] as a recent observer has shown, how much more probable the cause I have suggested, while the explanation of its action is quite as obvious.

But whatever the source of the hemorrhage, the quantity in the vast majority of cases is in no wise perilous, and generally the function of the physician is limited to the control of the resulting peritonitis, which in the encystment of the effusion accomplishes a beneficent purpose, but, not attaining this end, may be quickly mortal.

The third variety of *uterine hemorrhage*, which for convenience has been designated *mucous*, is vastly the most frequent, the most important, and the most complex as to etiology and therapeutics.

The monthly congestion to which the uterus is subject, and which terminates in hemorrhage from the ruptured vessels of its mucous lining—physiological hemorrhage—is a powerful predisposing cause of pathological hemorrhage.

In the study of the causes of the latter, we may conveniently consider them under three headings—*traumatic*, *dyscrasic*, and *congestive* or mechanical.

The unimpregnated uterus is little exposed to direct accidental traumatism.[2] Guarded by walls of bone, and these walls rendered a still better protection by muscular and other investment on either side, while other defence is found for this organ in its interposition between the bladder and rectum, which in their varying states of distension are greater or less hindrance to exterior injury; and besides, the elastic supports of the uterus, firm enough to hold it in normal position, lax enough to accommodate the vary-

[1] Archives Générales, July, 1873.

[2] "La nature semble avoir épuisé ses ressources pour mettre l'uterus à l'abri du traumatisme." Genése et Etiologie du Hémorrhagies Uterines. By Dr. J. Bougon, Paris, 1873.

ing condition as to repletion or vacuity of neighboring organs, ordinarily secure its exemption from injury in blows, or shocks, or falls the body may receive. Hence it is almost invariably the case, when the uterus does receive such violence as suggested, the injury done it is minor in comparison with that done to those structures intervening for its protection.

Dr. Bougon has mentioned physiological traumatism as a cause of uterine hemorrhage. But really when coition—for this is referred to—produces such result, the uterus is excessively congested, as at the commencement of menstruation, or from disease, or from dislocation, or there may be ulceration, etc., or there is a chlorosis, or other blood-disorder, which, not only from a deteriorated quality of the blood, but from weakened walls of the vessels, facilitates hemorrhage, and the cause first mentioned is but one of the factors in its production. And still further, when *excessive* coition is followed by metrorrhagia, the latter is to be attributed oftener to vaso-motor paralysis than to traumatism.

Intentional traumatisms are not unfrequently causes of uterine hemorrhage—*e. g.*, leeching the cervix, the application of caustics, uterine catheterism, incising the cervix, various other operations, such as removal of tumors, amputation of the neck, *et cet.* Nevertheless, in regard to some of the causes, their action is not direct—thus, cauterizing the uterine neck or cavity may cause hemorrhage purely by reflex action; while others are not isolated and independent in their action, *e. g.* leeching the cervix is not ordinarily followed by excessive flow of blood, but such flow may then ensue if there be hepatic congestion, and Dr. Bennet,[1] illustrating the relation between such congestion and uterine, remarks that these were the only cases he had observed where leeching caused "an almost uncontrollable hemorrhage:" exploration of the uterine cavity with a sound, if a cause of hemorrhage, simply furnishes the evidence of disease.

Dividing a strictured cervix is not always an innocent operation, even when done by the most skilful.

Nor are incisions in the cervix, advised in certain cases of uterine inversion, and first performed by Dr. Robert Barnes,[2] exempt from the peril of hemorrhage, as the case narrated by

[1] Uterine Inflammation.

[2] In his memoir in the Medico-Chirurgical Transactions, 1869, Dr. Barnes remarks, "For twenty years I have taught in my lectures that the unyielding cervix may be divided by incisions carried into its substance from above downwards, at different points of its circumference. Pressure then applied will cause

Dr. Thomas illustrates.[1] Dr. Barnes advises two incisions, one on each side of the os, and speaks of having made them "about one-third of an inch deep." Courty directs one anteriorly, and one posteriorly, or three equidistant—a practice that is probably safer, considering the arrangement of the bloodvessels of the cervix, than the lateral incisions of Dr. Barnes. So, too, the propriety of incisions "about one-third of an inch deep," may be at least doubted when we remember that the thickness[2] of the cervical wall in the virgin is rather less than half an inch, and would not in a case of chronic inversion greatly exceed this measurement.

Operations upon the cervix in case of pregnancy may be followed, as would be readily suggested, by more than ordinary hemorrhage, and may cause abortion or premature labor. Nevertheless the rule is not absolute; a polypus that has caused little or no bleeding may be removed, with the probability that no considerable hemorrhage will follow, and that gestation will not be at all disturbed.

While mentioning this topic, let me refer for a moment to a very interesting monagraph[3] by Massot, entitled the *Influence of Traumatisms upon Pregnancy.* In it the author has collected two hundred and fourteen cases of injuries occurring to, or of surgical operations performed upon, pregnant women; some of these injuries or operations involving the uterus or contiguous organs, some of them of a most serious character, such as severe contusions and fractures, ovariotomies, amputations, ligation of large arteries, *et cet.*, and his conclusion from an analysis of these cases is that traumatisms do not interfere with gestation, except those that materially, or for a length of time, disturb the uterine circulation, or call into action uterine muscular contractility.

Both of our eminent countrymen, Sims and Atlee, have performed ovariotomy in pregnancy without gestation being interrupted. And Spencer Wells[4] has had four successful cases in similar circumstances, so that the rule which Gallez[5] gives, preg-

it to yield more easily. Huguier, Professor Simpson, and Dr. Marion Sims have suggested the same plan." This plan was first executed by him in 1868.

[1] Diseases of Women. Third edition, p. 430.

[2] Savage on the Female Pelvic Organs. See also remarks of Dr. Savage, London Obstetrical Society's Transactions, vol. vii. p. 141.

[3] Paris, 1873.

[4] London Obstetrical Society's Transactions, vol. xiii. p. 281.

[5] Histoires des Kystes de l'Ovaire, etc. Brussels, 1873.

nancy constitutes an absolute contra-indication to ovariotomy, since the operation invariably causes abortion, is too positive. It would astonish good old Mauriceau, could he waken from his more than two centuries of quiet sleep, and witness one of these great operators perform ovariotomy,[1] perform it upon a pregnant woman, and she live, and complete her gestation, when he had already thus discoursed upon a cause of abortion: "A great Noise"—I am quoting from Hugh Chamberlen's Translation, published in London in 1727—"suddenly and unexpectedly heard may make some women miscarry; as the Noise of a Cannon, and chiefly thunder-claps; and yet more easily, if to this Noise be added the Fear they usually have of such Things, which happen rather to the young than elderly Women; because their Bodies being more tender and transpirable, the Air which is strongly forced by that Noise, being introduced into all her Pores, offers a great Violence by its Impulsion on the Womb, and on the Child within it; which the elder being more robust, thicker, and closer, resist with more Ease."

Returning from this digression, in the 9th volume of the *London Obstetrical Society's Transactions*, Dr. Graily Hewitt has reported a case of fatal hemorrhage from an extraordinary cause, to wit, traumatic aneurism of the uterine artery.

The traumatisms that occur in abortion or in parturition may be sources of hemorrhage. Van Swieten first compared the recently delivered woman to one having undergone an important amputation; and the late Sir James Simpson expanded this idea in the analogies he pointed out between surgical and puerperal fever; while Pajot speaks of the detachment of the placenta producing "a physiological wound." Not only in this case there may be, but from premature detachment of the placenta, either accidental or necessary, there must be hemorrhage more or less grave.

After parturition, hemorrhage is prevented by what has been termed the *retractility*—as distingnished from the *contractility*—

[1] Very possibly the old accoucheur would, with one of his countrymen of the present day, put any such operation in the domain of *chirurgie terrible*. Joulin, in his *Gazette Obstetrique, Gynecologie*, April, 1873, uses the following language:—"Il y trente ans on ne connaissait que deux sortes de chirurgies: la grande et la petite. Depuis quelques années on a vu surgir une classe d'operations nouvelles que, en raison de la hardiesse des opérateurs et de l'effrayante étendue du traumatisme, on pourrait intituler: *la chirurgie terrible*."

of the uterus, a property which does not inhere equally in all parts of the organ, and which Dr. Dewees taught belonged especially to the inner of the three layers into which anatomists have divided its muscular structure; but which, as Dr. Chantreuil[1] asserts, is rather to be attributed to the middle coat, which is thicker at the fundus, the usual placental site; thus explaining the fact that a greater hardness is detected by the hand applied over it after parturition than by the finger applied near the os; and also the fact that there is a greater liability to post-partum hemorrhage whenever the attachment of the placenta has been otherwhere than that mentioned as the normal one.

Now, whatever hinders this *retractility*, retention of placenta, or clots, inertia, etc., is the cause of hemorrhage.

Hydatiform degeneration of the placenta has no more constant symptom than hemorrhage.

Post-puerperal hemorrhage is most frequently caused, as pointed out by Joulin,[2] by the weak condition of the blood-vessels prior to the complete regeneration of the mucous membrane that has been cast off; the epithelial layer which should protect these vessels is not visible until about the ninth day after delivery, and is not completely restored until the twenty-fifth day, or even later. Of course, any unusual exertion, straining, or lifting, even being on the feet too soon or too long, may, under such circumstances, be the exciting cause of the flood; and it is obvious the first, possibly the only, therapeutic measure required will be *rest*.

Other forms of traumatic hemorrhage are found in ruptures of varices of the cervix, or of the cervix itself, or of the body of the uterus, and in injuries inflicted in attempts at criminal abortion.

But with this brief allusion, I pass on to refer for a moment to *dyscrasic* hemorrhages.

In hæmophilia, according to Lebert and Tardieu, there is an important alteration in the blood; and while this disease is more frequent in the male than in the female, seven to one, it may occur in the latter under the form of uterine hemorrhage—even the first sexual congress has caused a mortal flow of blood.

A fatal case of metrorrhagia in purpura has been recorded by Barton.[3] So too in scorbutus, in chlorosis, in lead poisoning,

[1] Du Application de l'Histologie à l'Obstetrique.
[2] Traité des Accouchements. [3] Edinburgh Monthly Journal, 1841.

etc., hemorrhage from the uterus has been observed; and Bernutz has directed attention to metrorrhagia as frequently occurring in syphilitic women when under mercurial influence.

Now in these and similar cases it is not the altered condition of the blood that is the direct factor in the production of the hemorrhage; this red river of life that bears nutriment to every part of the organism is constantly washing away its banks, and, if it bring no suitable material for their repair, the weakened conduits readily rupture under any unusual pressure of their contents.

Gubler[1] has collected a number of cases to show that very many metrorrhagias, regarded as anticipated menstruations, at the commencement and in the progress of acute maladies, are simple uterine fluxes, similar to the initial epistaxis of fevers, and he designates them *uterine epistaxes.*

The facility of the occurrence and the abundance of the flow are in relation with the intensity of the disease, with the predominance of determination to the hypogastric organs, with the tendency toward a dissolved condition of the blood, and the *ramollissement* of the tissues, whence the hemorrhagic diathesis proceeds. And Raciborski[2] speaks of the disposition to uterine hemorrhages being inherent in eruptive fevers.

Uterine congestion resulting in hemorrhage may be active or passive—either too much arterial blood is thrown into the womb, or venous return is hindered. The immediate cause may be in the organ itself—some disorder of position or of structure; or in an organ—contiguous or remote.

Disease of the heart, especially of the mitral valve, of the liver, abdominal tumors, etc., may be causes of metrorrhagia. Tilt[3] has directed attention to the relation between ovaritis and menorrhagia; and Gallard[4] states that the latter is the most

[1] Des Epistaxes Uterines simulant les Regles. Gubler's collection of cases might well have contained the following from Sydenham: "Not long ago a very virtuous and noble lady was committed to my care, who had the dangerous black smallpox, and though at the beginning I forbid all those things that might exagitate the blood, yet she being of a very sanguine complexion, and brisk and young, the season of the year being very hot, she was seized of a sudden on the third day after the eruption, with so large a flux of the courses at an unusual time, that the women that were by thought she miscarried; but though this symptom continued violent for many days," etc.—*Of the Irregular Small Pox in the Years* 1670, '71, '72.

[2] Traité de la Menstruation.

[3] Uterine and Ovarian Inflammation.

[4] Leçons Cliniques sur les Maladies des Femmes.

frequent menstrual disorder induced by this disease. Uterine inflammation is a frequent cause of hemorrhage, but it is when this inflammation is mucous, not parenchymatous, for amenorrhœa results from the latter especially when it has continued for a length of time, the hyperplasia of the connective tissue terminating in sclerosis. In two-thirds of the cases of cancer of the uterus, according to Louis, the first indication of the disease is hemorrhage. Uterine tuberculosis also causes hemorrhage. Pelvic peritonitis, especially that variety of it designated menstrual, according to Bernutz, causes menorrhagia. Various uterine displacements cause hemorrhage, but I have not time to dwell upon their mutual relation.

To only two other local causes of uterine hemorrhage, to wit, uterine polypi and fibroids, shall I refer. How do uterine polypi cause hemorrhage is a question to which very different responses have been given. Klob[1] remarks that these growths are often exceedingly vascular, and very small ones may give rise to fatal hemorrhage; he teaches that the hemorrhage is from the polypus. Gooch held the same view, stating that as soon as a ligature was applied to the pedicle the flow of blood ceased. The teaching of Barnes is similar as to the source of the blood.

On the other hand, Boivin and Duges assert that the vessels of the polypus are too small to furnish so much blood—that it comes from the uterine sinuses; in their work, too, this important fact has been noted, a fact which, I believe, has been neglected by recent authors, that the nearer a polypus is to the fundus the greater the hemorrhages, but these diminish with the elongation of the pedicle and the descent of the tumor.

McClintock[2] states that, notwithstanding the hemorrhage almost invariably ceases upon the strangulation of the tumor, there is good reason for thinking that the blood comes, in great part at all events, directly from the interior of the uterus.

The polypus, as an irritant, is a source of uterine hyperæmia, often a hyperæmia followed by inflammation, as shown by new adhesions between the tumor and the womb—secondary pediculization—which I believe are not unseldom found.

The fact that Gooch alleges as a conclusive proof that the hemorrhage is from the polypus, viz., tying the pedicle stops the flow, is not without occasional exceptions; and besides, it is sus-

[1] Op. cit. [2] Diseases of Women.

ceptible of this explanation: the ligature destroys the vitality of the growth—that vitality which invited thitherward, not only to itself but to the uterus, an increased flow of blood.

It is not surprising that the hyperæmic condition of the uterus induced by a polypus should be relieved by attacks of metrorrhagia.

Fibroids, submucous or interstitial, cause hemorrhage by the increased quantity of blood they invite to the uterus, by the altered condition induced thereby in its lining membrane, and by the hindrance which their direct pressure causes, or that of the uterine distortion or displacement they have induced, to venous return.

In briefly considering the *therapeutics of uterine hemorrhage*, the third variety of this disorder only will be referred to.

While it is true that metrorrhagia is a symptom, and that with the removal of the cause this effect ceases, yet very often direct means must be promptly used to stop the flow of blood; otherwise, while limiting our efforts to the removal of its cause, the patient will die.

It is important to recognize and avail ourselves of the preventive treatment. Physiological and mechanical rest, for example, for the uterus disposed to bleed excessively at a monthly period, are all-important; physiological rest likewise should be insisted upon for this organ when the seat of cancerous disease.

So, too, the more general use of the electro-cautery in uterine surgery,[1] as a substitute for knife or scissors, is to be considered an important advance in no respect more valuable than in the prevention of hemorrhage; a bloodless surgery is alike less perilous and less terrifying to the patient.

In obstetricy we may prevent the hemorrhage which otherwise might ensue from placental retention, by securing an early delivery of the placenta—an early delivery before the os has contracted, hindering its extrusion, an early delivery in parturition in the later months or at the full term of pregnancy, by the method known as Credé's, and in earlier months ordinarily by keeping the os well dilated with two fingers of one hand, then hooking them over the placenta, as Mauriceau has quaintly expressed it, like "a crab's claw," while with the other hand upon the hypogastrium the uterus is pressed down upon the fingers.

[1] See Clinical Notes on the Electric Cautery in Uterine Surgery, by J. Byrne, M.D. Wm. Wood & Co., New York, 1873.

But hemorrhage once established, how is it to be arrested? I confess to no faith in astringents internally administered for this disorder. After rest, position, and cold, I believe the most valuable of uterine hæmostatics are quinia and ergot, the former chiefly in what has been termed atonic menorrhagia, the latter in the metrorrhagia consequent upon fibroids. In order that benefit shall result from quinia it ought to be given in doses of at least from four to six grains every three hours until the patient is decidedly under the peculiar nervous influence of the remedy, or until the flow is materially lessened. The action of quinia under these circumstances is no proof of this agent having a special influence upon the uterus, for it has also been used successfully in other hemorrhages, *e. g.*, hæmoptysis.

The anti-hemorrhagic application of ergot in obstetric practice I omit; and indeed only one of those in the treatment of uterine hemorrhage occurring unrelated to the puerperal condition, will be referred to. The hemorrhage in submucous and interstitial fibroids has been arrested by freely incising the os uteri—a plan alike proposed by Baker Brown, Nélaton, and McClintock; a similar result will sometimes follow dilatation with sponge tents; or from intra-uterine injections of tincture of iodine and water, as advised by Dr. Savage, or of solution of iron salts. Ergot administered by the mouth has long been recognized, too, as of great value in such circumstances. But its hypodermic use, as advised by Hildebrandt, is far more satisfactory, and is one of the most important therapeutic applications in recent years. Not many years ago Dr. Robert Fergusson, adopting the language of Dupuytren, declared all these tumors "inoperable." Twenty-two years ago an eminent member[1] of this Association, one of the great ovariotomists, not only of this country but of the age, demonstrated that they were operable—a demonstration which has been further strengthened by the recent brilliant operations of Dr. Sims.[2] However, operations are not possible in all these cases—nay, not in the majority, while the hemorrhage the growths cause is the great peril. That peril is best prevented by hypodermic ergot. In 1869 Langenbeck had shown the benefit of ergot thus used in two cases of aneurism; and two or three years ago Hildebrandt published the extraordinary results he had obtained in uterine fibroids by a similar use of ergot. Since that time nu-

[1] Dr. Atlee. [2] New York Medical Journal, April, 1874.

merous reports have appeared in medical journals both at home and abroad, in the main confirming the deduction of his experience, an experience which has been enlarged since his first publication, but not changed, as will be seen by a note from him published in the last number of the *American Journal of Obstetrics.* As advised by Dr. Squibb, the best form of ergot for hypodermic use is obtained by first properly evaporating the fluid extract to a solid, and dissolving this product in water in such proportion that one minim of the solution shall be equivalent to one grain of ergot. In my own practice I have used an injection of 15 to 20 minims daily, and it is exceptional when there is not a diminution of the growth or growths within a week. Charles Hunter, in his article upon *subcutaneous injections* in the recent edition of Cooper's *Surgical Dictionary*, asserts this rule: "All fluids should have such a strength that five minims should contain or exceed the medium dose,"—a rule that is utterly needless and impossible to follow in this case.

Not only is there a diminution in the uterine enlargement in the majority of cases from hypodermic ergot, but *pari passu*, a marked diminution in the hemorrhage. This plan of treating these growths meets better than any other the course Cruveilhier advised, and which he happily termed *traitement atrophique.*

Astringent injections into the uterus for the arrest of post-partum hemorrhage, have recently been the subject of earnest and not always unimpassioned discussions, especially when the injection of a solution of perchloride of iron has been the topic, a treatment of which Dr. Robert Barnes has been the great advocate though not the originator. Cold water injections into the uterus have been favorably spoken of by many of the older obstetricians; but Guillon[1] was the first, I believe, to employ an astringent injection, in 1825 a decoction of oak bark was successfully used by him in hemorrhage from inertia; and nearly thirty years ago some English practitioners[2] made use of tannin injections for a similar purpose and with like success. In a note from Dr. Faye, Professor of Midwifery in the University of Christiania, published in the May number of the *Obstetrical Journal of Great Britain and Ireland*, it appears that the use of perchloride of iron in post-partum hemorrhage is justly due to the late Professor d'Outrepont, of Wurzburg, who used it in the same

[1] Archives Générales. [2] Lancet, August, 1846.

manner as it is now used, and wrote about it thirty years ago. Dr. Barnes, in his third Lettsomian lecture, published in the *Lancet*, October 10th, 1857, remarks, "I suggested some time ago the injection of sesquichloride of iron," and refers to the fact that Dr. Schrier, of Hamburg, had related, 1855, some instances in which this agent had been employed with success. And in a discussion in the London Obstetrical Society, in 1869, Dr. Rogers stated that he had used such injections for fifteen years, while Dr. Hall Davis said that he had made use of pernitrate, persulphate, and perchloride of iron for several years, and had found them equally efficacious. So much for the historical portion.

That these injections have a wonderful degree of certainty in speedily arresting post-partum hemorrhage, no one considering the cases adduced can doubt. But are they always safe? Now no number of successful cases, be it hundreds or thousands, will invalidate a single case where a fatal result has obviously followed such injection. I know that the advocates of this treatment claim that death was not caused by the injection; and yet I cannot see how any unprejudiced physician can read the reports of the case of Dr. Heywood Smith, and that of Dr. Bantock, without being almost if not quite convinced that this was the cause of death.

Certainly such injections should not be used without obeying the instructions of their great advocate, as to the strength of the solution, as to having the uterus completely empty of all clots and oval fragments, and as to having the os patent. Nor, it may be added, are such injections advisable in secondary puerperal hemorrhage.

Joulin,[1] apropos to this topic, advises employing all possible means before resorting to so dangerous an agent. And most of us can adopt the language of Dr. Savage,[2] asserting that we "have never met with a case of immediate post-partum hemorrhage rebellious to the old-fashioned practice."

The subject of *transfusion*, more especially in puerperal hemorrhage, is just now attracting considerable professional attention. Mauriceau taught, "When a woman, new-laid, has flooding, and there be no piece of the burden, or false conception, or clot in the uterus, bleed the woman in the arm, not so much thereby to empty the fulness as to make diversion;" but modern therapeu-

[1] Gazette de Joulin, April, 1873. [2] Obstetrical Transactions, vol. xv.

tics proposes to open a vein in the arm not to abstract, but to impart blood.

A venerable friend in the profession, who has accomplished more than half a century of active labor, recently remarked that he had passed through two epidemics of electricity, and was now in the third, which he hoped to survive. The third epidemic of transfusion is now visiting us, the first being in the seventeenth century, and both of the others in the nineteenth.

Transfusion[1] is the translation of the blood of one animal into the circulation of another; but a similar introduction of salines, alcoholic fluids, or medicinal substances, is *infusion.*

Dr. Ullersperger[2] asserts that "the idea and theory of transfusion, etc., appertain by full right to Magnus Pegel (1593-1604); that the operation was first performed on the hounds of the Captain of Cavalry, George de Wahrendorf, by a huntsman who injected Spanish wine; that about 1538 it was proposed for man by the theologian Potter, who apprised several members of the Philosophical Society of it, and that the engineer, Christopher Wren, at Oxford, constructed the machinery which appeared to him most suitable, and afterwards performed it on a dog." Dr. Aveling states[3] that Dr. Lower first performed transfusion in England, 1665, making a communication by quills between the carotid artery of one dog and the jugular vein of another; and in November, 1667, the same physician, in conjunction with Dr. King, transfused the blood of a sheep into a man—the latter submitting to the operation for one guinea. John Denys, however, of France, preceded Dr. Lower and King—performing the operation either in June, 1667, or else in 1666—authorities differing as to the date. He successfully transfused in five cases, using the blood of calves or of lambs, entertaining extravagant notions as to the value of the operation; but finally one of his patients, a lunatic, upon whom he had thrice performed transfusion, died a fews hours after being operated on the last time—really poisoned by his wife in all probability—but the opposition was so bitter,[4]

[1] Definition given by Dr. Barnes in Cooper's Surgical Dictionary.

[2] Prize Essay. Transactions of the Pennsylvania State Medical Society, 1867. It will be observed that in the historical statement given by Dr. U., the first operation was not transfusion at all, but infusion.

[3] British Obstetrical Journal, August, 1873.

[4] It is curious to notice, in the history of transfusion and of infusion, both in France and elsewhere, the severity of censure on the one hand, and the extrava-

and the excitement so great in consequence of this death, that Parliament decreed that any one performing the operation without the proposition having been made to, received and approved by the Faculty of Medicine, should be imprisoned. And thus a stop was put to transfusion in France for nearly two centuries.

A revival of interest in the subject of transfusion took place, at least in England, through the experiments and writings of Dr. Blundell[1] about the middle of the first half of this century. He was the author of the *mediate* in contradistinction to the *immediate* method which had been the sole one used for one hundred and sixty years, although asserting that "in performing transfusion there can, I conceive, be no doubt but that the blood ought to be transmitted by tubule, merely, when this method is practicable." Among Dr. Blundell's experiments were bleeding a dog to syncope and then restoring him by transfusion, and nourishing another dog for three weeks similarly, the first eleven days the transfusion was mediate, the rest of the time immediate. Feb. 17th, 1825, his first case of human transfusion occurred—the operation was done for puerperal hemorrhage, and was successful, although but four ounces of blood were used. Dr. Blundell's theory was that from half a pint to a pint of blood would be advisable; and he has remarked in reference to *post-partum* hemorrhage, that of twenty women thus suffering nineteen would recover under ordinary means, but the twentieth would die without transfusion. It is worthy of note that in the successful cases

gance of praise on the other. It was alleged that "a man who had received the blood of an inferior animal in his veins becomes dull and loses his wit, and despoils himself of his proper inclinations, and puts on those of that beast;" and moreover from this use of sheep's blood wool would grow on his body! On the other hand, "an old dog, on receiving a quantity of blood from a young one, did leap and frisk, whereas he was almost blind with age and could hardly stir before"—a dog whose history deserves to be retained in medical literature quite as well as that of the venerable horse (see Dr. Barker's paper on Transfusion, *New York Med. Record*, April 1, 1874), that immediately after transfusion got up and ate grass! Antony Nuck, 1692, mentioned delirium, mania, leprosy, syphilis, and cancer among the diseases for which transfusion was used. But the most extraordinary statement comes from a physician, 1716, as to the value of infusion—he had thereby not only cured his patients of various diseases, epilepsy among the number, but likewise himself of intermittent fever and of the itch! And yet this physician's name was, not Annanias, but Parmannus! The statements of a doctor who is willing to take his own medicine, and who will acknowledge having the itch, are worthy of implicit belief.

[1] His "Physiological and Pathological Researches" were published in 1824.

then occurring, the quantity transfused was often if not always very small. Thus two cases are reported in the *Lancet*, 1835, in one of which three ounces, and in the other two ounces only of blood were used—facts which led the opponents of the measure to allege that the operation was useless, recovery taking place *post hoc* instead of *propter hoc*, and its advocates to state that the new blood acted as a stimulant to the heart. When we remember, according to Piorry, that one-tenth of the weight may be lost by hemorrhage without a fatal result, while according to Burdach a loss of from one-ninth to one-fifth is instantly mortal, it does seem somewhat marvellous that two ounces of blood will, upon the theory of its supplying the loss, save life.

In 1826 and in 1828 transfusion was twice successfully performed, in each case the hemorrhage succeeded abortion; in the first four ounces of blood were used, but in the second fifteen ounces.

Dr. O'Shaugnessy first advised the injection into the veins of saline solutions or infusions in cholera; Dr. Latta, of Edinburgh, first put the suggestion into practice, and in fifteen cases of cholera collapse had five recoveries. So, too, infusion has been successfully performed in puerperal fever by Dr. Tyler Smith, and in poisoning by aconite by Dr. Richardson.

Coagulation of the blood has been one of the difficulties in transfusion, and various methods have been resorted to to obviate this, among others the application of heat; but recently it has been shown by the experiments of Richardson and others that heat promotes coagulation. In 1834 Dr. Schultze recommended the intestine of a dog or calf, cutting it into pieces eight or ten inches long, tying one end of each piece, and thus making sacs into which the blood was received, and from which it could be taken by the transfusion syringe; his assertion being that blood could thus be kept in contact with an animal membrane for two or three hours without coagulation. Defibrination of the blood has been resorted to in many of the cases.

Where one of the inferior animals is made the blood-donor, the transfusion is usually immediate, and made from artery to vein. So, too, transfusion where a human being is the donor may be immediate—from vein to vein—and the simplest instrument for this has been devised by Dr. Aveling.[1] Mediate transfusion may

[1] Both Dr. Aveling's instrument, and that of Leiter were exhibited at the meeting of the Section. See its Proceedings.

be with pure blood or with defibrinated blood. The apparatus of Leiter may be used in either case, as well as in the second method mentioned.

Many questions as to the respective methods, as to the kind of blood,[1] as to the quantity, *et cet.*, as whether there is advantage in the suggestion of Dr. Richardson, adding ammonia, or adding phosphate of soda according to Dr. Hicks; as to whether, indeed, infusion—infusion of liquid nutriment—can take the place of transfusion; what instruments are the best, etc., are yet to be settled.

But behind them all lies the question as to the utility of transfusion. Cazeaux gave but little credit to the operation when he wrote of its having been highly praised in England where it seems to have succeeded several times; and Jacquemier went so far as to suggest that the reported successes simply proved that the operation could be performed without danger, and indicated his belief that it would soon fall into oblivion.

But with so many facts in favor of transfusion, and these accumulating—in favor of it especially in puerperal hemorrhage[2]—it is worthy the careful investigation of every obstetrician, if not making it his duty to provide himself with the necessary instruments for the operation. In fifty-eight cases collected by Professor E. Martin, cases dying from uterine hemorrhage, transfusion saved forty-six; the statistics of Dr. Drinkard[3] gave eighty-nine cases and fifty-six recoveries: doubtless if all the cases occurring up to the present time were collected, there would be twice or thrice as many.

In view of these facts we can, with Saboia,[4] express a regret that transfusion occupies a doubtful place in obstetric art, or adopt the language of Leishman,[5] "Professional attention has of late years been so thoroughly awakened to the importance of this procedure, that there exists in the minds of many experienced practitioners a strong hope, and some confidence, that obstetric mortality may in this way be in some measure reduced."

[1] Dr. Austin Flint, Jr., in his remarks on Dr. Barker's paper, *New York Medical Record*, April 1, 1874, speaks unequivocally in favor of human blood.

[2] As far as I have been able to ascertain there has been no successful case of transfusion in this country for puerperal hemorrhage.

[3] Richmond and Louisville Medical Journal, Jan. 1872. Dr. Drinkard has tabulated 170 cases of transfusion, but the number above refers only to those in which the operation was done for puerperal hemorrhage.

[4] Traité des Accouchements, Paris, 1873.

[5] Obstetrics.

It certainly will be one of the noblest triumphs of our divine art when, by an operation so rational, so simple, so speedy as transfusion, we can rescue woman just when she has passed through the profound sorrow of parturition, just when she is entering upon the supreme joy of maternity, from otherwise inevitable death.

REDUCTION OF AN INVERTED UTERUS OF SIX MONTHS' STANDING WITHOUT AID OF THE HAND IN THE VAGINA.

By R. B. BONTECOU,
OF TROY, N. Y.

Mrs. D., æt. 24 years, was delivered of her first child Nov. 7, 1873, after rather a tedious labor, the membranes rupturing two days before its completion.

It is represented by the patient that rude efforts were made by the attendant by pulling at the cord to deliver the placenta. Considerable hemorrhage followed, and continued for some days after confinement, when another physician was called in, who recognized the condition of complete inversion of the uterus.

Feb. 22d, about three months and a half after the accident, I saw the case in consultation, and after verifying the diagnosis by a careful examination, proceeded to attempt its reduction. The patient placed in proper position, under ether, my right hand was introduced into the vagina with great difficulty, owing to the smallness of the passage. Manipulation of the uterus by the hand was done as well as possible in such confined position, and pressure made on the fundus with the concave end of a stethoscope, over which was stretched a piece of rubber. For an hour this was continued without producing any apparent dilatation of the os, and I desisted from further efforts until I could procure some other means for its reduction.

The posterior wall of the vagina was somewhat lacerated, and a pelvic peritonitis made it necessary to postpone operative interference. The patient continued to flow more or less daily, but the administration of ergot, and of iron tonics, and the use of astringent injections, improved her condition, and she in a few weeks gained strength for another operation. I had determined, if again called to the case, to devise some means for its reduction that would not necessitate the introduction of the hand into the vagina; and for that purpose had a large pair of lithotomy forceps, bent in the blades, to be used as a substitute for the

hand in manipulating the uterus; the blades were so protected by rubber tubing as not to injure the textures, and so widely separated at their points as not to injuriously pinch the body of the womb.

I also provided myself with one of Prof. White's repositors, that he has used so successfully, and a hard rubber tubular speculum, through which the repositor could easily pass. Also a metal ball mounted on a suitable handle, which was furnished by Dr. Murphy for the occasion.

May 23d, I again saw the patient, and, with the assistance of Dr. Murphy, the attending physician, put the patient under ether, and in the position as for lithotomy, on a low bed; then kneeling, so as to bring my chest on a level with her hips, commenced manipulating the uterus with the forceps, which, in a few minutes, so reduced the volume of the tumor that the speculum easily glided over and embraced it; then introducing the repositor through the speculum, used steady pressure on the uterus, while my left hand made firm counter-pressure on the abdominal portion of the organ. In an hour and a half the fundus had ascended to a level with the os, and could not be advanced any further with the repositor, as its cup-shaped extremity was too large to enter the os.

The repositor was then laid aside, and the metal ball pressed against the fundus for a few minutes, when the organ returned suddenly to its normal position with a sensible shock. The shank of the repositor broke off from the spiral before concluding the operation, but I was able to continue its use by wrapping a towel about it, and using it with my right hand.

The patient recovered promptly without any accident, and is now about her household duties.

I would suggest as an improvement to Prof. White's instrument that it should be (except the cupped extremity) a curved rod of unyielding steel, about fourteen inches in length, with a padded disk for chest rest, and dispense with the spiral spring.

Pressure can be kept up while in that position, and easily graduated, while you have the left hand firmly hooked into the abdominal portion of the organ making counter-pressure. The steel rod should be perforated in its centre to allow a strong strap to pass from it and buckle over the middle of the left forearm, thus converting both the instrument and the forearm into levers, giving much greater power with much less tiresome effort.

MINUTES OF THE SECTION

ON

SURGERY AND ANATOMY.

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ON

SURGERY AND ANATOMY.

THIS Section convened at the Circuit Court Room, and was attended by a large number of members.

At half-past two o'clock Dr. S. D. GROSS, Chairman of the Section, called the meeting to order. He said that he would defer his address until to-morrow. However, he was highly pleased to know that proceedings could be conducted with harmony and without idle disputations. He was happy to be surrounded by a common fraternity—a fraternity in which we all must live and die, and which should cement us more closely together. We must work, work, work. We have not met here for the purpose of shaking hands and giving expression to cordial greetings, but for the purpose of inaugurating a new era in the history of the Association in working to the point. This is what we *must have* to give credit to the Association and to place us in a proper position before the American people—work. He was struck by one feature of the Association—the number of gray-headed and bald-headed gentlemen, giving the Association, at its assembling this morning, a venerable appearance. The meetings of the British Medical Association were composed for the most part of men who have passed the meridian of life, while the opposite of this was a striking feature in the meetings of the American Medical Association held hitherto. He was glad to see the younger members present, no matter how young. But from the present gathering of men of middle age it seemed to him as if a point in the history of the Association had arrived which augured well for the future.

Dr. A. DUNLAP, of Ohio, read a paper on *Enchondroma over the Sternum.*

Dr. DUNLAP had a microscopic examination made by Drs. McKenzie and Robert Comegys, of Cincinnati, by which were found simple cartilaginous cells with fibrous tissue passing through it. No drawing had been made, but several photographs and the mass in pieces were presented.

On motion the paper was referred to the Committee of Publication.

Dr. E. M. MOORE, of New York, read a paper on *Epiphyseal Fracture of the Superior Extremity of the Humerus.*

Dr. ISAAC QUIMBY, of New Jersey, would expect considerable exudation on the epiphysis after waiting three or four weeks. He could easily understand its reduction in recent cases.

Dr. MOORE had reduced two cases at the end of two weeks, but did not know whether it would be possible at the end of four. If adhesion had occurred, break it up if possible.

Dr. J. C. HUGHES, of Iowa, could not understand how this fracture was to be distinguished from fracture of the anatomical neck. Fracture at the epiphyseal line will give the symptoms, it is true, but considering the attachment of the supra-spinatus, infra-spinatus, and teres minor muscles, with the action of the biceps, he would expect the symptoms in fracture of the anatomical, and, perhaps, too, of the surgical neck. He had known a fracture of the surgical neck occurring four months before to be mistaken for dislocation. He doubted if reduction and retention could be effected with the ease asserted.

Dr. J. M. KELLER, of Kentucky, explained that fracture at the epiphyseal line did not occur except during childhood and adolescence. He believed the method of reducing it to be original with Dr. Moore.

Dr. ROBERT REYBURN, of District of Columbia, doubted the separation of the epiphysis so late as the age of nineteen, as mentioned by Dr. Moore as having occurred in a case of Dr. Hamilton's. The treatment of injuries at this part was difficult. Fractures of the anatomical neck should be capable of like treatment. He supposed fracture of the anatomical neck is what had really occurred instead of at the epiphyseal line as supposed.

Dr. MOORE explained that epiphyseal fracture could only occur before ossification has occurred, the age for which differs. From Sir A. Cooper's and R. W. Smith's report he had supposed sixteen to be the limit of age, but Hamilton's case gave the symptoms at nineteen. Ossification may not be complete until the twenty-fifth year. During adolescence the epiphyseal line is the

weakest place, and hence fracture is more likely to occur there. During this age suspect epiphyseal fracture. This fracture was not like any other, because it has a specific and definite line, while other fractures have an indefinite line through the anatomical or surgical necks or through the tubercles.

Dr. HUGHES asked why this fracture was so liable to be mistaken for fracture of either neck.

Dr. MOORE replied that when the bones are brought into place they are held there by the action and pressure of the muscles. The head rolls around, but does *not* produce the pathognomonic crepitus—at best getting only a muffled crepitus. Again we have mobility, not found in dislocations. The error in diagnosis occurs because the profession did not know what to make of it. The error should not be made, because of the prominent projection, and because the forces acting upon the fragments were uniform. We do not have this projection in fracture of either anatomical or surgical neck.

Dr. WASHINGTON L. ATLEE, of Pennsylvania, asked the opinion of the Chairman, Dr. Gross, who stated, in reply, his entire concurrence in all Dr. Moore had said.

Dr. GREGORY, of Missouri, asked whether necrosis of the articulation had occurred in a case mentioned which had been examined six months after, to which Dr. Moore replied in the negative.

On motion the paper was referred to the Committee of Publication.

Dr. LEWIS A. SAYRE, of New York, presented and read his report on *Fractures.*

Dr. J. T. HODGEN, of Missouri, objected that if a thigh be placed in the plaster of Paris splint, in the straight posture, the muscles on the back of the thigh will be tense and in front lax. We cannot bring *all* the muscles to a state of normal extension at the same time, and hence a position in which there would be no reflex irritation would be marvellous. In general, spasmodic contraction would occur. Dr. Sayre has said it does not matter what means are taken, so we succeed. But what means are we to use? Again he says, do not make it too long! Now the calcareous matter at the end of the fragments would soften and tend to produce shortening. If a fracture be oblique, something more than plaster of Paris is needed—otherwise not.

Dr. SAYRE had said that extension and counter-extension should be made in the proper direction, and then on no side

would any muscle be stretched. All he had claimed was that it was better to start out with the idea that we could secure perfect results rather than that we must necessarily have shortening. In fracture of the femur we are to have the thigh-piece capable of being lengthened or shortened if treated upon the inclined plane. This was first accidentally ascertained by Dr. Nelson, of Lower Canada, where a lumberman had both thighs broken, and by chance had got upon a ledge of rock whose width was precisely the length of the thigh—such being the relief of pain that the man had fallen asleep. Taking the hint he made an inclined plane to suit the thigh, and had a perfect result at the end of two months. Dr. Nelson was then sued for the alleged malpractice of keeping his patient unnecessarily confined, and had to flee his country.

Dr. E. H. GREGORY, of Missouri, expressed his astonishment. He thought Dr. Sayre's results barely possible, and wanted further evidence. He treated his cases by extension and counter-extension, with all the perfection of adjustment possible with mechanical appliances. If he had seen fractures occur without shortening he had forgotten it. He had seen young persons get well without shortening of the limb as a whole. We all know that we cannot get union of bones or soft parts without previous softening. There is necessarily some loss of material where there is inflammatory action. Inflammation always consumes some of the soft parts. A young person getting no shortening might be accounted for, but he did not think an adult could get union without shortening. Again, precise adjustment was practically impossible—the reverse was all talk and might do to tell *students*. The new material used in repair *will contract*, even if the injury be the simplest cut in the finger. If fractured limbs are as long, it is to be accounted for by growth somewhere else. Plaster of Paris has the advantage of allowing patients to go about, but he thought the best results as regards proper length would be obtained by the use of extension and counter-extension. He thought plaster of Paris just as suitable in treating injury of the soft parts as of bones.

At this point in the discussion, Dr. Brodie entered the room and announced that the Mayor was in his room waiting to receive the delegates.

On motion the further discussion of this subject was made the special order for Wednesday.

The Section then adjourned until Wednesday at 2.30 P. M.

JUNE 3d.

At half-past two the Section was called to order agreeably to adjournment.

The discussion following Dr. SAYRE's paper was resumed by Dr. GARCELON, of Maine, who agreed with Dr. Sayre that our aim should be to secure perfect results. The object, however, was not always easy or possible to accomplish. In oblique and comminuted fractures the perfect adaptation of the broken fragments was a matter of great difficulty and often an impossibility. To maintain them in position is a still more troublesome undertaking. In his judgment no one method was adapted to all cases. Almost every bad case required some special adaptation of treatment. In reference to Dr. Sayre's statements, he must say the results were remarkable if all the one hundred and thirteen cases were those of the long bones. In general practice more or less shortening usually occurs, even under the most careful treatment, and to determine upon the living subject the exact amount of this shortening is simply impossible. He must confess he had yet to learn how to measure so accurately as to judge of one-sixteenth or even one-quarter inch shortening. He had been present at several suits for malpractice, and found from half an inch to an inch difference in the amount of shortening as found by different experts. In an oblique fracture where there is necessarily irritation and slipping by of the fractured surfaces, how can we extend so that the fragments shall be adjusted to their original position and then keep them there? What means can we use in the femur, the tibia, or the humerus with oblique fracture (with or without comminution) so as to obtain such remarkable results? If such a result can be got in, say, ninety-nine per cent., it seems that the medical profession require education.

Dr. M. WATERHOUSE, of Wisconsin, asked in what proportion transverse fractures occurred.

Dr. GARCELON would call such fractures transverse as could be reduced, and would stay in position readily.

Fractures are oblique when the bones would slip by easily. He had oftentimes secured better results by making extension with weight and pulley, using the body as the counter-extending force, than with plaster of Paris or starch bandage. He had recently treated a girl aged sixteen, of irritable temperament, with fracture of the femur at the junction of the middle and upper

third, making extension by the weight and pulley, without any other counter-extension than that offered by the friction of the body on the bed. The body was level; the result was about perfect.

Dr. SAYRE asked what prevented the body slipping down.

Dr. GARCELON reasserted the fact, and stated that there was, in general, no difficulty about the slipping down—the indentation in the bed being usually sufficient to keep the body in position.

Dr. SAYRE had always to raise the foot of the bed. He thought it unsafe to leave the body on a level without a perineal band or some counter-extending force.

Dr. CHAPIN had treated several fractures with weight and pulley, and the patient on a level bed. He would be insensibly drawn down and would require to be occasionally drawn up—once in twenty-four hours, say.

Dr. PLUMMER, of Illinois, desired to present a drawing and description of an unpatented fracture apparatus invented by Dr. Fitch, and presented to the Illinois State Society at its meeting at Peoria in 1867. It is a triple inclined plane set on castors. Dr. Plummer had used it in several cases. He bandages the two limbs together to prevent the broken thigh from bowing outward. It was used about entirely in his section of country.

Dr. GROSS, the chairman, reported that he had used silicate of potassa or soda in fractures, and preferred it to either plaster of Paris or the starch bandage. The latter should become obsolete. The silicate hardens almost immediately. It may be used in fractures of the clavicle and of the upper and lower extremities. The only objection to it was its difficulty of removal.

Dr. BREWINGTON, of Ohio, wanted to call attention to the single point that there was often more than one-sixteenth of an inch difference in the lengths of corresponding bones on different sides of the same skeleton. He had found more than an inch difference in the length of bones of the arm, while the limbs, as a whole, were of equal lengths. This had not received the attention it deserved.

Dr. QUIMBY, of New Jersey, thought there were not ten men who would believe there would be no shortening. First, there was the difficulty of measurement. In the museum at Washington he had seen 52 cases of fracture of the femur with shortening which varied from half an inch to two inches. These were facts which did not allow of dispute, as happened upon the living sub-

ject. He could never in practice get within half an inch in the adult femur, but commonly got from that to an inch shortening. He urged that the doctrine of no shortening was dangerous, and gave a case in point, in which a man with one and a half inch shortening had been urged to bring a suit for malpractice from its being represented to him that shortening was unnecessary. He believed shortening might occur after union.

Dr. HUGHES accepted the statements of Dr. Sayre, and the interne staff of Bellevue Hospital. He would like to hear anything new in the treatment.

Dr. WATERHOUSE, of Wisconsin, urged that if Dr. Sayre's position in reference to shortening were true, let the danger come. A fracture might be treated in a well-arranged hospital, like Bellevue, with a good result, but how about treating a like case in the hovels of the poor in the country? He had listened to the mode of extension with the body on a level bed. He thought this sliding down a frequent cause of shortening. However, in general, after twenty-four hours he found the hips would sink into the bed so as to prevent slipping down.

Dr. PIERCE, of Illinois, thought that the Proceedings of this Association would be the best evidence in the country for the coming year, after that of experts. He was startled at the proposition that shortening was unnecessary. In practice he thought he had a good average. A source of error is that the measurements are often made too soon after the injury, while the suit for malpractice comes a year afterward perhaps. He thought shortening went on after the patient was up. Although there was none at first it increased, especially during the first six, nine, or twelve months, and more especially if the fracture was oblique. He had treated a boy whose father, intelligent and made aware of the importance of extension, gave every possible assistance. On the boy's getting up, the father, who had attended to the measurements thoroughly, would have made affidavit that it was half an inch longer, although probably of about the same length. The boy was shot three years afterward. The femur was found an inch shorter than the other, with the ends distinctly overlapping. Yet in this case extension and counter-extension were kept up for seven weeks, a long time for a child, hence the splints were not taken off too soon. He thought that a shortening of an inch in an oblique fracture was a good result. We should be ready to sustain one another. In fractures of the tibia and fibula

he had tried what was called the Bavarian splint. It is a book-splint which obviates most of the difficulties in the use of starch or plaster of Paris. To apply it, two folds of flannel are to be stitched together, one over the other, fastened at their centre. Fold one around the limb and sew its edges together over the crest of the tibia. Wet the plaster and spread it upon one of the depending portions of the outer piece of flannel. Mould this around the limb from joint to joint, and then mould the other part of the outer flannel in like manner. It "sets" soon. Its advantages are: He can get up in two hours and go about on crutches; it is not so weighty as to be inconvenient; it can be opened up like a book so as to permit examination of the seat of fracture; it can be reapplied more loosely or tighter as found necessary by the varying amount of swelling. This he thought the best treatment for fracture of the femur, but he had not tried it because he did not choose to adopt novelties. He would put up fractured femurs by the old extension and counter-extension plan. When surgeons got into court they would find this plan the best to have pursued. In a compound or comminuted fracture, he would cut away an opening to allow of discharge if he had applied the book splint, but he repeated that he had not used it in such a case. He had always put a compound or comminuted fracture in a fracture-box, using extension if necessary with a pulley.

Dr. SAYRE was glad that he had provoked this animated discussion. He had been misunderstood. He had made a report showing the results of his treatment in a very favorable light, but he *knew* the statistics to be absolutely and positively true. They had been drawn up chiefly by Dr. Van Wagener, of Bellevue Hospital, in whose reliability he had the utmost confidence. The measurements were made by Prof. Frank Hamilton, who, until recently at least, did not believe that union of fractured bones could occur without shortening. Dr. Hamilton, along with Dr. Sands, had made a personal examination of all the cases in his (Sayre's) wards. Dr. Hamilton acknowledged that there were some cases in which he could find no shortening, and had stated that if he could bring seven consecutive cases together he would admit the principle. Dr. Gregory, of Missouri, had yesterday asserted, and to-day repeats it, that it was impossible for union to occur without shortening. This, and the fact that recently cases had come under his notice, had determined him on appearing

here, whereas some time ago he deemed it unnecessary, supposing the matter had been fully brought before the profession by Drs. St. John, Crosby, and Bryant. When he considered that at this day there were some men who waited for the swelling of the soft parts to subside before adjustment, he thought there were some men in the profession needing instruction in the treatment of fractures. In the last number of the *N. Y. Medical Record* appears a letter from Dr. Frank Hamilton, in which it appears that Dr. H. has at last confessed that shortening is not necessary. The young men on the Bellevue house staff should have the credit of carrying out the treatment so as to get these good results. He *knew* that the results had taken place, and, as much as others, was interested. When a fracture is secured properly, *let it alone*, that it may have a chance to unite. You have been told that five men measuring the width of a door will differ, and yet you know that a whole magnificent edifice may be planned and framed at one place, sent to another, and put together by other men. Any other conclusion would lead us to infer the mathematical sciences inexact. *In all long bones all that is necessary is extension and counter-extension in the proper direction until you secure accuracy of adjustment.* Dr. Hodgen yesterday objected that the tension of the front and rear muscles of the femur was not equal. Gentlemen, are your muscles now stretched or quiescent? If you will make the same amount of extension as before the break, why should there be any irritation? If you do not extend to the normal point, it is not perfect; while if you come to the normal point, there is quiescence, *after which do not extend but secure fixation.* Secure this in any way you please. This extension and counter-extension, again, should be applied immediately on your seeing the patient. If there be so much swelling that it cannot be done with safety, I do not advise you to put it up in plaster, but use extension and counter-extension. With this the swelling will subside in half the time it will take if let alone. In compound and comminuted fractures leave an opening. If extension be made carefully while you are putting on the splint, it will mould itself to the part. However, we are too dependent upon apparatus. Each country doctor has more fracture machinery than he. Throwing aside all cumbersome apparatus and firmly carrying out the principle are all that is requisite. In opening the book splint we must have some one to look after the extension. He used to put broken femurs on the triple inclined

plane, which is about the best if the thigh-piece is of the exact length of the thigh. We can, in general, get union without appreciable shortening. He did not want to lay down any law, because the discussions here were not as high authority as a good text-book. It is, however, high time we had turned a new leaf in the treatment of fracture.

Dr. PIERCE replied that he would remove only one side of the book splint at the time of examination. The advantage of examining is to verify accuracy of adjustment. From lack of examination a starch bandage had strangulated an arm of which he was aware, and this too, although under the charge of a very intelligent and faithful practitioner who had subsequently asked him to assist in amputating it. He would be surprised if a given distance, say the wall, when measured by different men, was not reported by them of different lengths, provided they used a string like that commonly used in measuring fractures.

Dr. GARCELON asked Dr. Sayre what treatment he would adopt in a chubby boy, of say four or five years, with femur fractured at junction of upper and middle third. What would he require as a guide by which to adjust it? His other leg? Is there not difficulty in getting accuracy? What would he apply so as to have accuracy of adjustment?

Can he apply a starch bandage and have a child go about with a limb of proper length? Case: A patient, aged sixteen or eighteen, had fallen and broken the arm near the junction of the middle and upper third of the [fore?] arm. An intelligent practitioner dressed it, he says, with perfect adjustment, in a starch bandage, and attended it from day to day, but did not remove the bandage. After the first night there was no pain. At the end of ten or twelve days, he, Dr. Garcelon, was sent for and found the arm gangrenous from the knuckle to the elbow, nearly exposing the overlapping broken bones. Amputation was advised and performed. Was there malpractice in this case?

Dr. SAYRE would put that chubby boy on the triple inclined plane, with a pillow under the nates and an aperture in the pelvic piece not more than two and a half inches wide to permit defecation. Getting the muscles quiescent on the splint the leg will "set" itself. There was a difficulty in retaining fat children in plaster of Paris.

Dr. GARCELON objected that the child would twist about and could not be kept in position, to which Dr. Sayre replied that he

would put a box on each side, expecting the child's instinct to teach it to remain in the position of least pain.

UNUNITED FRACTURE.

Dr. SAYRE, in answer to a question as to how he would treat ununited fracture, stated that he would rub the ends together *very much.* This failing, he would run two needles down attached to a powerful galvanic current. In a recent case he had to resort to this galvanism, getting inflammation excited on the third day. The leg was then put in plaster of Paris. By mistake the whole leg had been so treated as if for fracture, while it should have been applied to the region of fracture only. After two months the bones were found ununited.

METHOD OF APPLYING PLASTER OF PARIS.

Dr. SAYRE went on to say that Dr. Figaro, of the Bellevue Interne Staff, had made an instrument by which the pelvis was elevated by a windlass while the plaster was being put on. A woollen blanket is first fitted to the leg and pelvis, and over this are applied two or three thicknesses of coarse factory cotton saturated with plaster. An ordinary roller is made, saturated with plaster, and this is moistened before unrolling upon the limb. Between the two or three thicknesses, strips of wire gauze are applied, into the meshes of which the plaster insinuates itself, and are there firmly held. These strips, being fastened together below the sole, gave a point of attachment for the pulleys. In general the patient was anæsthetized, and then extension and counter-extension were applied until the adjustment was accurate. This could not be done by one man making manual traction on the limb while the patient was awake. The plaster was to be continued up over the pelvis, going around it and avoiding making the figure-of-eight in applying the roller. The patient was to be kept asleep, if necessary, until it hardened, to hasten which, salt might be sprinkled upon it. Next morning he could go about on crutches. After sufficient extension, the ends of the gauze were to be cut off, leaving the rest of the gauze in the plaster. If the fracture was compound, a pin should be placed with point upwards, directly over the seat of fracture. The flannel, the saturated roller, and any further plaster were put over this pin, and after hardening, an aperture could be made by cutting around

the pin which merely served to mark the seat of fracture. Around the edges of this aperture, collodion might be applied so as to make the skin adhere to the dressing and prevent discharges running along the limb under the dressing.

Dr. GREGORY, of Missouri, had to-day answered Dr. Sayre in the affirmative, when he (Sayre) asked him if he believed there was no united fracture without shortening. He (Gregory) would say there was no firm cicatrix without shortening. If not contracted it was not firm. Two living surfaces when separated do not come together without softening these surfaces, and this softening is attended by a consuming process, and hence loss of original material. Scars contract indefinitely—notably the scars of burns. So even with bones. He was astonished when told that on removing the book splint there would be contraction without disturbance. There is no absolute quiescence—it is only relative. There is a tonic action always there. Extension and counter-extension will not prevent this contraction of muscles—and this is independent of cicatricial contraction. Bearings might be had upon the pelvic bones and other prominences, but how about the subcutaneous connective tissue lying loose beneath the skin?

Dr. SAYRE had objected to opening the book splint because it took away the support from the sides as well as the extension exercised upon the prominences, say the instep.

Dr. LANKFORD, of Missouri, thought the matter should be settled by observation. Percival Pott had described, in the middle of last century, how a fractured thigh could be treated by posture without extension and counter-extension. He had the leg flexed upon the thigh, and the thigh upon the trunk, with abduction. It was acknowledged by Sir Astley Cooper and others, and became popular. There were then three epochs in the history of treating fractured femur: 1. In the straight position; 2. That taught by Percival Pott; 3. A return to the old method of keeping the limb straight. We have difficulties of adapting the extending and counter-extending force to the muscular antagonism, so as to maintain coaptation of the fragments. The weight may vary from five to twenty pounds in different cases, and from day to day in the same case. Again, extension must be made upon the osseous prominences, making the tissues sore, so that extension cannot well be maintained in its full extent. Again, we have the confinement of the patient. In a few days the limb

will shrink from the plaster of Paris or silicate of soda dressing. If we over extend we increase reflex irritability.

Conflict of testimony was found in everything. Malgaigne flatly contradicts Dessault on important points. He had never seen a fracture without some deformity and shortening, but he believed they could be even in oblique fracture and that even in the femur. He thought we should aim at perfection, although seldom attaining it.

Dr. KING, of Pennsylvania, was introduced to the notice of the Section by Dr. Sayre, as having in his own person had fracture of the cervix femoris, without appreciable shortening. Dr. King stated that he lay for five months, seven weeks of which was in Dessault's splint. It is still gaining. He believed the good result was chiefly brought about by *most pertinaciously* keeping up extension for four and a half weeks. He believed that union could occur without shortening, but he thought that physicians in the country should not be expected to produce such results.

Dr. HODGEN, of Missouri, asked in reference to the limb, and was answered that "it was not appreciably shorter." Dr. Hodgen proceeded to say that to maintain extension, pressure must be made upon several points, as the anterior superior spinous process, the tuber ischii, the perineum, etc., and that pressure produced absorption exemplified by the pressure of gloves upon the fingers. Hence necessary shortening.

Dr. GARCELON, of Maine, said that Dr. Sayre, with skilful and faithful attendants in the hospital, was a widely different thing from like cases in private country practice. He uses the straight board splint.

Dr. QUIMBY, of New Jersey, used extension and counter-extension. He applied strips of adhesive plaster to the leg, making a loop at the foot, and put on a weight until the limb was of equal length with the other. He has had to apply thirty-five pounds to a strong man, and keep it on for three weeks. This man had fractured the femur in the upper third. In general he had good results, but with a little shortening. Dr. King had moved, before sitting down, that the report prepared by Dr. Sayre be referred to the Committee of Publication. In amendment he, Dr. Quimby, would offer the following:—

"*Whereas*, There seems to be some uncertainty in the minds of the profession in reference to the treatment of fractures of the long bones without shortening, therefore,

"*Resolved*, That it is quite impossible as a general rule to treat fractures of the long bones without more or less shortening."

The amendment was lost, and the original motion of Dr. King to refer report to Committee of Publication was carried.

Dr. WHITING, of Wisconsin, asked whether the fracturein Dr. King's case were intra- or extra-capsular.

Dr. KING did not know which. The leg was everted with about half an inch shortening. He had been thrown from his vehicle upon the curbstone. Several surgeons had examined it. He had been urged at time of fracture to be put under an anæsthetic so as to diagnose whether intra- or extra-capsular, but he declined.

Dr. WHITING remarked that Dr. King's walking without limping was no proof that there was no shortening.

The meeting then adjourned.

JUNE 4th.

Dr. GROSS having been summoned to Baltimore, Dr. W. T. BRIGGS, of Tennessee, was called to the chair.

THE USE OF ELECTRICITY IN SURGERY.

Dr. GEORGE M. BEARD, of New York, gave an address on the employment of electricity in surgical diseases.

Goitre can be treated in various ways. He commonly began treatment by ordinary electrolysis, that is, where the needle is plunged directly into the body of the growth, connected with either the positive or the negative pole. Ether is not used in such a case during electrization. In the case of a large goitre he had used mild currents, and found that in one week it had diminished considerably, and in five weeks had largely disappeared. In general, very strong faradic currents are to be used on tumors. The results are complex. In a majority of cases of goitre they will go down from ten to seventy-five per cent., sometimes quite rapidly, and then nothing can be used which will push them further. In the case of goitre, before referred to, the result was almost complete, but the last quarter required as much treatment as the first three quarters. In general, the progress becomes slower and slower.

Had the tumor been *malignant* the result would not have been as satisfactory. Treat malignant tumors by long or short appli-

cations, by slow or frequent interruption, by strong or mild currents, and they will not improve. This is an important practical point in a matter in which there exists a great deal of misappresion. If the tumor is benign we may benefit; if not, not. In a case of ordinary epithelioma of the face, in an old man he would plunge the needle into it with a powerful current; but it was a slow, tedious, and unnecessary process. In the treatment of malignant tumors the true way, *in general*, was to get the body of the growth out of the way, and then fight the battle around the base. When the tumor is small, the needles may at once be placed around the base, the positive pole into the tumor while the negative burned it off. He mentioned a case in which healthy granulations and cicatrization followed. If the tumor be large, say scirrhus of the breast of average size, its body should first be removed. He had applied electricity in such a case, one in which Dr. Stephen Smith, of New York city, had removed the breast, but did not close the wound. With the patient still under the anæsthetic, the base was then well worked by a powerful galvanic current of thirty-two cells. The needles were applied not at the base, but in the healthy tissue around the base, which became slightly cauterized. The wound was left open, and is now rapidly granulating, the parts cauterized being left to slough. In the case of large tumors, the knife is to be used in general; but in small, we may or may not. In the case of Smith's patient it was not galvano-cauterization; cauterization was not sought, the object being the change in the tissues around the needle. The fluid theory has been discarded by the physicists; electricity was believed to move in undulations. The current passes from one extremity of the pole, but at a considerable distance from and around the pole. Hence its effect for this distance. This is a theoretical consideration in favor of this method. Observation must show whether this is superior to the older method. What is done, not in the cancer but around it, determines how you succeed. Dr. Stephen Smith has experimented with caustic arrows. In conclusion, whatever we may say about diathesis, this disease may be treated to a certain extent locally. The prospects are encouraging. One thing is sure, granulation takes place very satisfactorily indeed. The chances of pyæmia and septicæmia occurring are diminished, after this, as after the galvano-cautery.

Another class of diseases suitable for further experiment is diseases of the skin. He (Dr. Beard) had written to Dr. Althaus

the best authority in Europe, to make experiments in cases of skin disease, and to repeat some specified experiments which he (Beard) had made. His reply was that if he did he would be thought crazy in London. Nevertheless, in herpes frontalis seu ophthalmicus, in eczema, and in prurigo we see the results in a few hours, in some cases instantly. He had seen a case of chronic eczema of the lower limbs six weeks ago much benefited. It was one of sixteen months' standing. He had some time ago treated some cases by his method of central galvanization, *i.e.*, with the negative pole on the pit of the stomach, and the positive over the head and down the whole length of the spine from the insertion of the sterno-cleido-mastoid, obtaining effect upon the cord and the sympathetic system, and improving the nutrition. *No application was made to the seat of the disease.* The patient is affected through the nerve centres. In one case of chronic eczema there was immediate relief with steady improvement; he may relapse of course. By applying the current to a spot of say two inches square we may relieve the pain and itching; it will return, but by repeated applications we may cure the chronic eczema. These observations are the result of experience. It would seem as though the nervous system had a great deal to do with this disease. It can be treated very successfully indeed by applications acting through the nervous system, without coming near the part affected. This will be tried in two cases in the practice of Dr. McGraw, of Detroit, and which some of them would have the opportunity of seeing. He hoped others would corroborate these effects of electricity because its proper estimate must be the resultant of an extensive experience. It is not a specific for any single disease, but what it accomplishes is positive —improved nutrition. In general it is a matter of the temperament of the patient as well as of the disease. Two cases of the same disease in different temperaments may give opposite results. This would explain many apparent failures. The conclusion he would impress on them was that chronic eczema and prurigo were capable of medical treatment through the nervous system as well as by surgical treatment, namely, applications to the part.

Another form of skin disease, capable of relief, is *herpes frontalis seu ophthalmicus*, which has come under my observation within eighteen months. Out of one hundred cases of herpes only one was of this variety. In general they go to the ophthalmologist. The eruption occurs on one-half of the face only, commonly the

forehead, sometimes the nose, and sometimes the lip. It was formerly regarded as common erysipelas. Hutchinson, of London, has given it the name I have used. It is believed to be a distinct form of herpes. It was treated locally, or by the surgical method —one pole on the top of the head or back of the neck, and the other on the part affected, without regard to the direction of the current, which, it may be stated in passing, is of much less importance *in general* than is commonly supposed. By applying a mild galvanic current the patient becomes comfortable, and the pain, before of terrible character, passes gradually away. In a case referred to him by Dr. Bulkley, of New York, in which there was excessive pain, the current for half an hour gave no relief. In the course of two or three hours, however, he slept well with an anodyne, and shortly afterward he got easy. An ointment containing chloral and camphor was also used, but not until the electricity had been tested.

His experience would bear out the following conclusions:—

1. That certain benign tumors, as goitres, enlarged glands, cystic (tumors), and nævi, can be made to diminish or disappear under ordinary electrolysis, that is, with the needle plunged directly into the tumor.

2. That fatty tumors and enlarged lymphatic glands are usually very difficult to diminish by electrolysis, and sometimes they will not diminish at all.

3. That malignant tumors do not usually diminish, and rarely, if ever, entirely disappear under electrolysis, however faithfully used, but the attendant pain can be treated most successfully, not only by electrolysis, but also by simple external galvanization with sponges.

4. Malignant tumors, when sufficiently accessible and not too far advanced, may be treated by electrolyzing the base, or "working up the base," and this method promises more permanent results than have been obtained by the usual treatment.

5. That certain diseases of the skin—and notably herpes, chronic eczema, and prurigo—may be treated by different methods, and up to the present with the most gratifying success.

6. That diseases of the skin may be treated by the local and central method of using electricity, but some of the most brilliant results in the treatment of chronic eczema have been obtained by galvanizing the nerve centres, in the method of central galvanization without making any application to the diseased parts. The

results of this treatment seem to show pretty conclusively that chronic eczema is, to a considerable extent, dependent on the central nervous system.

Dr. WATERHOUSE, of Wisconsin, asked if there was anything in the nature of disease by which it could be said that one disease is positive and another negative; and was answered that the whole subject has yet to be studied, and that we cannot accept any theory until demonstrated.

Dr. BEARD, in answer to the question as to what prospect electrolysis held out in the incipient stage of malignant tumors before the glands were affected, replied, that even in that stage by placing the needles in the tumor the treatment will not be very satisfactory. It may arrest the growth for a time, but will not cause it to entirely disappear. This was his general opinion.

The report of Dr. Beard's address was referred to the Committee of Publication.

SHORTENING IN FRACTURES.

Dr. HUGHES, of Iowa, offered the following preambles and resolution:—

Whereas, The members of the Surgical Section of the American Medical Association have listened with interest to the report of Dr. L. A. Sayre, of New York, on the subject of fractures; and,

Whereas, Statistics accompanying said report evince in the institution represented (Bellevue Hospital) unusual results; therefore

Resolved, That this Section, after free discussion of the report and its reference to the Publishing Committee, would express their opinion, based upon experience, that the results in relation to shortening following fractures are better than can be looked for in general practice.

Dr. KELLER, of Kentucky, thought that results so good as Sayre's could not be expected of the country practitioner whose patients could not command the appliances and attention which those had whom Dr. Sayre had reported. He *believed* Sayre's paper, and with this understanding would vote for it.

The preambles and resolution were unanimously adopted.

Dr. A. GARCELON, of Maine, had known of a case of fracture of the cervix or head of the femur, in which appliances had been kept on for three weeks, when, becoming too annoying, they were removed. Accurate measurement then taken showed

half an inch of shortening. A year afterward about the same amount of shortening was found. To-day there is an inch and three-quarters shortening, showing that absorption was a process which might go on for years.

Dr. PIERCE, of Illinois, moved the following:—

Resolved, That this Section hereby requests that Dr. Sayre shall cause a second measurement, in so far as possible, to be made of the cases mentioned in his report, at least one year subsequent to the cessation of treatment, and report the same to this Association. Carried.

Dr. SAYRE asked those who doubted the possibility of union without shortening, to examine a boy, aged eleven, who, six years ago, had been the subject of oblique fracture, and had been treated by Dr. Farrand, of Detroit. He especially desired those who examined the boy to report the amount of difference in the length of the limbs and which limb had been fractured.

Several examined the boy, finding from one-sixteenth to one-half an inch difference. Some of those examining the boy declined to express an opinion as to which femur had been broken. Of those who did, the majority declared that the uninjured limb was the one fractured.

DISCUSSION OF DR. GROSS'S PAPER ON SYPHILIS.

Dr. HYATT, of Ohio, considered that Dr. Gross had committed himself to the unity of the syphilitic poison, while others of great eminence believed in its duality. He could not subscribe to its unity nor to the opinion that syphilis lies at the basis of tubercle or even of the whole class of scrofulous diseases.

Dr. SAYRE, of New York, when formerly lecturing upon the subject of the unity or duality of the syphilitic virus, had advised students to let the matter alone, because theories were contradictory. He believed in the spontaneous generation of syphilis, and thought it could be regenerated by twenty years of promiscuous intercourse among those who had never had any form of it before. From what he knew of the results of the trial of inspection in St. Louis, he believed they were favorable. He was proud of Dr. Gross, so well qualified, by position, character, and respectability, thus manfully to grapple with the question.

Dr. GUNN, of Illinois, had exclaimed, "All honor to Prof. Gross!" when he had been told of his propositions. He thought that the same causes which produce a given disease at one time

will generate it at another. Whether Job had syphilis or not would depend on his habits. He favored the spontaneous generation theory, remarking that syphilis was not generated at one period and handed down in "apostolic succession." He was gratified to hear the unity of the virus distinctly enunciated. Syphilographers have got the whole subject into a muddle. He could not believe in two kinds of the same disease. In, say, measles and intermittent fever, we have typical cases, but all are not so. It is so with smallpox, and so likewise with the greatpox. He knew that some of the worst cases of constitutional syphilis he had ever seen have followed soft chancre. He maintained that the dualists argued in a circle in declaring that when constitutional symptoms followed, it proved that the chancre had been hard; and when not, soft. He could see no moral or social objection to putting the evil into the legal strait jacket if we can. In answer to whether he would treat the chancroid and chancre alike, he replied that he applied a little basilicon ointment to each alike, which was about letting them alone.

Dr. KELLER, of Kentucky, would protect the hard sore from abrasion and give constitutional remedies. If found that the period of incubation was from six hours to fifteen or sixteen days, his only application would be some simple local dressing. The difficulty is in knowing when we have a chancre and when a chancroid. After twenty-five years' practice, he has yet to see a skin eruption after a bubo following chancroid if the bubo were properly evacuated. Attempts to discuss a bubo by mercury bichloride should not be made if it followed the hard sore, for it will appear in the subject or his offspring. One following chancroid would not appear in subsequent lesion if evacuated.

Dr. MOORE, of New York, being called for, could not sympathize with the remarks heard since he came in. He thought Dr. Gross's paper extraordinary. The evil with which it dealt was so extensive that he thought it a greater vice than drunkenness. Dr. Gross, however, had gone further than his (Dr. M.'s) convictions had followed him. He understood Dr. Gross to say that syphilis was a cause of scrofula and Pott's disease. His statements would seem to show that we have syphilitic and non-syphilitic forms of these diseases. He thought Dr. Sayre would mend his opinion as to spontaneous origin. When the Sandwich Islands were discovered there was no case of syphilis upon them. We know that in the inferior races promiscuous intercourse is the rule. It

was about so in the Islands, there being community of wives and husbands to a very latitudinarian limit prescribed by their native religious code. In Australia he believed there was originally promiscuous intercourse, a man being prohibited only from intercourse with his own sisters. Yet there was not a case on the island when discovered. Smallpox did not exist among our Indians when discovered. Measles decimated the children in the Sandwich Islands, where, before discovery, it was not known. Yet the Sandwich Islands have been the centre of missionary effort. What is the result to-day? Fifty thousand poor wretches on the Islands, and undoubtedly more than half of these affected with syphilis.

Dr. KELLER, of Kentucky, thought Dr. Gross had advanced some ideas in his paper only to provoke discussion.

Dr. BRODIE, of Michigan, moved that it be referred to the Committe of Publication. Carried.

Dr. KELLER moved the following:—

Resolved, That, in furtherance of the views expressed in the valuable address on syphilis by the chairman of the Section on Surgery and Anatomy, Dr. Gross, a committee of three be appointed to report the most feasible plan of state legislation to interrupt and control the rapid spread of syphilis. Lost.

Dr. A. GARCELON, of Maine, desired to call attention to the influence of circumcision in preventing the spread of syphilis.

Dr. E. H. M. SELL, of New York, desired to present a patient brought from a distance laboring under obscure disease.

Charcot, of Paris, had considered it myelitis; Benedict, of Vienna, had considered it a tumor of the brain, without locating it; and a similar diagnosis had been made by a surgeon at Rotterdam. Tumors now present themselves not in the brain but emanating from the skull. Is there a tumor there protruding through? This tumor is upon the upper side of the left temporal region, and is soft as though containing fluid. He has another tumor nearly over the head of the left radius. Both of these have appeared within the last six months. For the last two years he has had a tumor on the radial side of left wrist. He had the left radial artery cut fifteen years ago. Pupils were about equally dilated; tongue protruded in the middle line. His age is forty-seven. His grandfather died of apoplexy, a grandmother from scirrhus of the breast. His mother had an apoplectic stroke in

the winter of 1871, although she was lean and long-necked. The patient has never had syphilis. The chief symptoms are: Vertigo, no uncertainty in walking, can stand and walk with the eyes shut, but becomes dizzy on looking up. Writing or thinking for a time makes him confused. He complains of weakness all over, but especially in the spinal column, and more especially over the medulla oblongata. There is no paralysis by weakness more on one side than the other. Anti-syphilitic treatment has been tried and seemed injurious.

Dr. SELL also desired to present what he believed to be a unique case of muscular ossification.

The subject, a woman of about thirty-two years of age, was dissected by Dr. Richard Bookey, in the Pathological Theatre of Dr. Steven's Hospital, Dublin, in December 1871. Three photographs of the skeleton were exhibited. At the age of five years, she was gored by a bull, and from that time she became unable to make proper use of her limbs and other parts. She does not appear to have suffered pain at any time. She contracted a double pneumonia, of which she died in about two days. At the post-mortem, Dr. Bookey found no lesion of any of the viscera save that the lungs were found in a state of intense congestion. A uterine tumor and polypus were also found. The vascular system was normal. The ossifications are seen in the photographs, except two isolated bones which were found in the muscles of the leg. One of them was examined by the microscope, and was found to be true bone. A chemical analysis of it is subjoined, made by Dr. A. Bell, the bone being free of fat.

Organic matter	45.3
Phosphate of lime	45.47
Excess of lime existing as a carbonate and fluorine	7.78
Soluble salts of magnesia and fluorine	1.45
	100.00

A second photograph shown by Dr. Sell was of a case likewise dissected in Dr. Steven's Medical School, in the winter session of 1869. M. Murphy, a lunatic, aged seventy years, an extremely muscular man, exhibited at the post-mortem a fracture of the first rib on the right side. The deltoid crest on the left humerus was elevated about one-fourth of an inch. The large rib-like bone seen in the photograph existed in the gluteus maximus. No

inflammation either of the skin or muscles existed, or any other abnormal ossification in the muscles.

Another photograph was that of a man who had the whole body tatooed. The man had exhibited himself in various medical centres of Europe, and was considered a curiosity. He was a Greek, and had been a pirate. It took several hours each day for some months to accomplish the tattooing. The skin was very soft. "This man is a dangerous fellow; have nothing to do with him," was the tattooing deciphered and translated.

MORBUS COXÆ.

Dr. SAYRE, of New York, desired to exhibit an instrument he had used in the last stage of hip-joint disease. During the first stages he treated such cases by extension and counter-extension so as to secure rest. Rest of the part affected was the grand essential, but he believed perfect rest of the whole body by plaster of Paris dangerous, because not permitting exercise. By the means he adopted, he got perfect results in many cases.

A photograph shown was of a girl of thirteen who had hip-joint disease from the age of twenty-three months. The usual anti-scrofulous remedies had been given freely. She improved somewhat with a limb four inches shorter than the other, strongly adducted, but not flexed across the other thigh. Extensive sinuses led down to the bone. She was then brought to Dr. Sayre for exsection. Exsection was not performed, but necrosed bone was extracted. The instrument which he exhibited was then applied. It consisted of a belt around the pelvis with two perineal bands. A long steel extension piece extended along the outside of the limb from the pelvic band to beyond the foot. Beneath the sole was a projection about three inches long, at right angles to the piece parallel to the limb. The leg was secured to this projecting cross-bar by means of adhesive plaster applied to the leg and covered by a roller, the plaster being fastened to tapes, and the latter to the cross-bar. A cap was applied over the knee. Extension was made by a key and ratchet-work, as in the usual form of Sayre's hip-joint instrument. At the junction of the upright with the pelvic band was a joint, movable in all directions, allowing free motion in all directions, except adduction and inversion of the toe. In fact it secured the necessary abduction and turning of the toe outward. The result in the case was that the child could go about with perfect comfort in about six weeks.

In two other cases he had applied the same instrument after ex-section. Both were now running around in perfect health, with good motion of the joint.

The Section then adjourned *sine die.*

SYPHILIS IN ITS RELATION TO THE NATIONAL HEALTH;

BEING THE

ADDRESS IN SURGERY,

DELIVERED BEFORE THE

AMERICAN MEDICAL ASSOCIATION, AT ITS MEETING AT DETROIT, JUNE 3, 1874.

BY

S. D. GROSS, M.D., LL.D., D.C.L. OXON.

I here present thee with a hive of bees, laden some with wax and some with honey. Fear not to approach. There are no wasps, there are no hornets here. If some wanton bee should chance to buzz about thine ears, stand thy ground and hold thy hands; there's none will sting if thou strike not first. If any do, she has honey in her bag will cure thee too. QUARLES.

MR. PRESIDENT AND GENTLEMEN:—

The subject which I have chosen for the Address in Surgery, although not a novel one, is, nevertheless, invested with such momentous importance that it cannot fail, if rightly understood and wisely interpreted, to enlist your sympathy and arouse your warmest feelings. I allude to syphilis, considered in its relation to the national health; or, in other and plainer terms, to its deteriorating influence upon the human race. If I say that I approach this subject, in many of its aspects so unpleasant to my taste, with great fear and misgivings, with doubt as to its fitness to be discussed upon such an occasion, no one, I am sure, will question my sincerity. It is easy to foresee that some at least of the ideas and sentiments to which I shall be compelled to give utterance will be repudiated as unorthodox, if not denounced as positively prejudicial in their bearings and tendencies. I feel, however, that I have a great duty to perform, and it is difficult to conceive of a more favorable opportunity for presenting my views than the present, standing as I do in the midst of my brethren, congregated from all sections of the United States, and representing, in no inconsiderable degree, the character and inte-

rests of the medical profession. If, in the discussion of this subject, in some of its more important relations and manifestations, I should be so unfortunate as to give offence to some of my associates in this house, or in any wise disturb the prejudices of the public, I can only say, let it be so. Far be it from me, on the one hand, to court notoriety, or, on the other, to fear the reproaches and denunciations of my fellow-citizens. My sole object is to develop and defend facts, to separate truth from error, and, if possible, to induce those who shall hear me to consider fully, patiently, and deliberately the magnitude and importance, nay, the appalling character of the subject. I shall not be sorry if, in what I may say, I shall meet with opposition. When Charles James Fox was Prime Minister of England, he one morning rushed into the House of Parliament, exclaiming "I am ruined! I am ruined!" and when some one asked the reason he answered, "because the government has no opposition." It is a trite remark that opposition is the soul of business, and I should, indeed, be sorry if this address should fall still-born from my lips. The subject is one which invites, and, I hope, will provoke discussion. It is high time that it should be thoroughly ventilated, and brought boldly and prominently, not only before the medical profession, but the American people, who are so deeply interested in it. It is high time that they should be enlightened upon what is daily transpiring in their midst, and imperceptibly sapping the very foundations of society. When a pestilence, as, for example, that of cholera or smallpox, breaks out in a community, and threatens to decimate its population, every man's fears are at once aroused, and steps taken to counteract its progress; every citizen is upon the alert, and every newspaper is urgent in its appeals for help; but here is a disease a thousand times worse than the most deadly epidemic, doing its work slowly, and, as it were, in disguise and darkness, ruining entire families, destroying many of our best men and women, and laying the foundation of untold misery, wretchedness, and woe, not unfrequently extending through several generations, and literally poisoning the very fountains of life.

In discussing this subject, I shall speak, in the first place, of the history and origin of syphilis; secondly, of its mode of propagation; thirdly, of its prevalence; fourthly, of the indestructible character of its virus; fifthly, of its alliance with scrofula and lepra; and, lastly, of its treatment, curative and preventive, the

latter embracing the consideration of prostitution and of its effects upon the national health.

1st. It has long been my conviction, both from study and reflection, that syphilis has existed, as a distinct, independent, and specific disease, from the earliest periods of society. There can be little doubt that it is as old as the promiscuous intercourse of the sexes. If we have no definite or authentic account of its origin and early prevalence it is simply because there were, at that early age of the world, no men competent to observe and to record what they saw, or what was passing under their eyes. The ancient physicians confounded all kinds of diseases of the genital organs with each other, often mistaking the specific for the common, and conversely; and hence arose the idea that syphilis, as regarded at the present day, was, until a comparatively recent period, a purely local affection. The bibliographical researches of various writers, as Sanchez, Hensler, Rosenbaum, and, more especially, of Cazenave, have fully established the antiquity of syphilis. Proofs of an indisputable character exist that in China and India the disease was well known upwards of twenty-five hundred years before the Christian era. That syphilis prevailed among the ancient Israelites is sufficiently apparent from the accounts of the lepra in Leviticus, a complaint which, from the graphic delineation given by Moses of its contagious nature, so closely corresponds in its main features with syphilis that they must be regarded as being one and the same malady. No impartial and enlightened physician can read the accounts of the sufferings of Job and of David, those two great and wonderful men, without being convinced that they were brought on by what are usually called "early indiscretions." The symptoms they so graphically describe clearly point to what is now known as the tertiary form of the disease. Job, in chapter vii. of the Book bearing his name, says: "My flesh is covered with putrid sores," and, in chapter xxx., he adds: "My bones are pierced with pains in the night season, and my sinews take no rest." The royal Psalmist says: "There is no soundness in my flesh because of thine anger; there is no rest for my bones on account of my transgressions. My sores stink and are corrupt, because of my folly. For my loins are filled with a loathsome disease, so that there is no soundness in my flesh." Psalm xxxviii. Gonorrhœa prevailed in the time of Moses, and men affected with it were pronounced as unclean, and, consequently, as unfit to cohabit with

their wives. Is it probable that the inhabitants of Sodom and Gomorrah, both of which were destroyed on account of their wickedness, their crimes against nature, and other grave offences, were free from syphilis? Sexual commerce between the two sexes must have been of constant occurrence, and been followed, as it is in our own day, by the saddest results. The earlier races of mankind were endowed with the same feelings and passions as the people of modern times, and that promiscuous sexual intercourse was common among them is proved by the fact that concubinage was one of the peculiar prerogatives of the higher and more wealthy classes.

The errors into which the earlier writers fell arose, it seems to me, from the circumstance that they confounded what are now accepted as symptoms of constitutional syphilis with the effects of lepra, elephantiasis, mentagra, lichen, and other cutaneous affections now recognized as distinct and separate complaints, or as modifications of the action of the syphilitic virus, brought about by the influence of climate, occupation, modes of life, and other causes. Passing by the writings of the "Father of Medicine," who, in speaking of a disease peculiar to the Scythian women, mentions the occurrence of ulcers upon their genital organs, it is a well-known fact that Galen was acquainted with osteocopic pains, so graphically described by Job and by modern syphilographers, and also that he recommended circumcision in a case of obstinate chancre of the penis. Aretius speaks of the destruction of the uvula, tonsils, and fauces, as far as the root of the tongue; Plutarch, of erosions of the tibia; and Marcellus Empiricus, of serpiginous ulcers of the leg. Josephus, in his account of the last illness of Herod, attributes the death of that monarch to the putrefaction of his genital organs. Oribasius, Ætius, and Paul of Ægineta afford evidence of the clearest character, in their writings, that they had just notions of the nature and effects of syphilis.

If we seek for information respecting the existence of this malady among the early Romans, it will not be difficult to find it. The Latin physicians, imperfectly educated as they were, knew and distinguished several forms of sores upon the genital organs, corresponding with the hard, soft, and other varieties of chancre of the present day. Celsus, so celebrated for the purity and elegance of his diction, describes buboes and ulcers of the groins as products of diseases of these organs. Martial, in his epigrams,

refers to the existence of sores in the mouth and throat of debauchees, and he has a verse admirably descriptive of a family all the members of which, the parents as well as the children, were affected with condylomatous excrescences. Horace, in one of his odes, makes distinct mention of the disease; and Pliny states that a woman was drowned as a punishment in the lake of Como because she gave her husband a disease in his genital organs, from the effects of which he died. All these, of course, are isolated cases, but they are, nevertheless, of great value as showing the existence of syphilis among the earlier Romans. How depraved the ancient Roman women were, in the latter periods of the republic, is evinced by the fact that they openly wore breast-pins and other ornaments representing the male genital organs. To suppose that such a people were free from venereal maladies is an egregious absurdity, unworthy of serious refutation.

The assertion that syphilis originated in the New World, and that it was thence carried to the Old by the sailors who accompanied Columbus in his voyage of discovery, is without the slightest foundation in truth. Indeed, so far from this having been the case, there is every reason to believe that these men imparted the contagion to the natives, and thus planted the seeds of the disease upon this continent. The notion of the American origin of syphilis may be regarded, as has been happily remarked by Cazenave, a falsehood invented by a Spanish writer, Oviodo, who published a pamphlet upon the subject in 1518, nearly twenty years after the outbreak of the epidemic in Italy, in order to palliate, if not to justify, the outrages committed by his countrymen in America; atrocities so heinous as to excite the indignation of all Europe.[1]

The history of syphilis, nosographically considered, remained very imperfect until the close of the fifteenth century. The earlier writers had only, or chiefly, studied it in its primitive relations, as it affected the genital organs and the groins. The constitutional effects of the disease, especially the various forms of eruptions to which it gives rise, were either unknown to them as separate and distinct entities, or, as seems more probable, they were misinterpreted, or ascribed to other causes. That this should have been the case is not at all surprising when we reflect upon the fact that hardly anything was known of visceral syphilis,

[1] British and Foreign Medical Review, vol. xxiii. p. 317, 1847.

now ascertained to be of such frequent occurrence, until within the last fifteen or twenty years. Knowledge is originally bounded by narrow limits; it is only by degrees that it expands, and assumes definite proportions, shedding its luminous rays upon the objects of its investigation. J. Fernel, whose work, entitled "De Lues Venereæ Curatione," appeared at Venice in 1546, at least half a century after the epidemic of syphilis in Europe, was the first to give an account of secondary syphilis, as Ricord was the first to describe what is now known as its tertiary form. The frightful ravages committed by syphilis in the French and Spanish armies during the siege of Naples, and soon afterwards in Europe generally, towards the close of the fifteenth century, afforded the physicians of that period ample opportunities of studying the disease both in its local and constitutional aspects, and the result was the publication of a number of treatises full of interest in an historical point of view.

How syphilis took its rise, whether in the human subject or in the inferior animals, is a question which has often been asked, but never satisfactorily answered. Ricord, I believe, was one of the first to suggest the idea that it sprung, like cowpox, rabies, or malignant pustule, from some of the domestic animals; and in a work remarkable for its learning, entitled "Recherches de Pathologie Comparée," issued in 1845, the author, Dr. C. F. Hensinger, of Cassel, makes a statement, now universally accepted by veterinary surgeons, that all these creatures are subject to contagious discharges, vegetations, and ulcerations of the genital organs, which are transmissible by coition and inoculation, giving rise to a class of affections closely resembling those induced by the syphilitic poison in the human subject. From his knowledge of these diseases he is led to conclude that they are very much in the same position as the syphilitic affections of our race were prior to the close of the fifteenth century. He disclaims the idea, advanced by certain authorities, that syphilis was originally propagated from man to the brute.[1] That these assertions are well founded is rendered highly probable when it is recollected that our domestic animals are subject to many, if not all, the diseases incident to the human species. Blennorrhagia is met with in the urethra of horses and dogs, and leucorrhœa is a frequent affection of cows, mares, and sluts.

[1] British and Foreign Medical Review, vol. xxiv. p. 89, 1847.

A contagious venereal affection, closely resembling syphilis, is liable to occur among the equine races, and has been described under various names by the French and German veterinary surgeons, as chancrous epizootic, venereal typhus, and syphilis of the horse. It is said to prevail with the greatest severity in Southern Russia, whence it has spread to Prussia, Hanover, Bohemia, Hungary, Silesia, Switzerland, Wurtemberg, and France. It has also been noticed in Algiers since the occupation of that country by the French. The disease, which is originally local, presenting itself in sores upon the genital organs, is followed by cutaneous eruptions, paralysis, and various nervous affections, often terminating in death. Its contagious character is well established.[1]

Those of my audience who desire to study this subject will find much interesting information in a work recently published by Dr. T. W. Müller, entitled "Die Venerischen Krankheiten im Alterthum."

2dly. The *modes of infection* in syphilis are too well known to require anything more than a passing notice. Impure connection is, of course, the most common source of the disease; but the contagion may also be communicated in the act of kissing and smoking, by the contact of various utensils, as spoons, knives, and drinking cups, and, in the child, in the act of sucking through the nipple of an infected mother or nurse. Accoucheurs occasionally contract the disease from the inoculation of their fingers during their attendance upon infected women. I have at present under treatment two medical gentlemen suffering from this cause, and what is, if possible, still more lamentable, their wives are equally tainted, both laboring under constitutional symptoms. During the last fifteen years numerous cases have been reported in which the infection was communicated through vaccination. The outbreak of syphilis by vaccination which occurred in 1861 at Rivalto, a mountain village in Piedmont, was so peculiar as to attract general attention. For some time the cause remained a mystery, but after some investigation it was finally ascertained that the disease had arisen from the lymph that had been inserted into the arm of an apparently healthy child, but which, upon a careful examination, was found to have been affected with inherited syphilis. Of sixty-three children thus vaccinated forty-six were almost simultaneously infected. In addition to the

[1] London Lancet, p. 251, Aug. 16, 1873.

children twenty women suckling them contracted the malady. Of 351 persons vaccinated from children laboring under syphilis, whose history has been collected by Viennois, 258 were inoculated, the remainder escaping. In 1866 an outbreak of syphilis occurred at Morbihan, a village in France, caused by infected lymph employed in vaccination. Depaul, who was commissioned by the Academy of Medicine of Paris to examine into the nature of the endemic, reported that of 42 children whom he had an opportunity of inspecting, 39 had suffered from syphilis. During our late war numerous cases of vaccinio-syphilis occurred among our soldiers, especially among those of the Confederate Army, which have been carefully collated by Professor Jones, of New Orleans, and made the basis of an exhaustive memoir upon the subject, constituting a highly valuable contribution to our literature.

Biett long ago remarked that there are certain forms of syphilis with which every species of contact may prove dangerous. Every one now admits, what was for a long time doubted, that the secretions of a syphilitic uterus are capable of inoculating the male organ during sexual intercourse. This statement is true not only of purulent and muco-purulent matter, thrown off by the surfaces of this organ, independently of the existence of syphilitic sores, but also of the menstrual flux, especially when, as not unfrequently happens, it is more than ordinarily bloody, and also of pure blood, emanating from the uterus. Simple vaginal secretions occasionally possess similar properties. The proof of these statements is found in the fact that many of the public prostitutes of Paris and other cities, who are constantly undergoing inspection, often communicate the disease when the most careful and patient investigation fails to detect any, even the most minute sores, abrasions, or mucous patches in the genital organs. The records of private practice afford similar proof. Many writers now speak of a true syphilitic gonorrhœa, attended with a discharge of a contagious character, followed, when inoculated, by constitutional infection. Dr. William A. Hammond, of New York, was one of the first writers to call attention to this subject, and to insist upon its reality. It must not, however, be forgotten that it is notoriously difficult to detect contagious sores in the female genital organs, either because they are often extremely small, or because they are situated within the uterus, and thus elude observation, however carefully made. Inguinal adenitis is very uncommon in chancre

of the uterus, and the enlargement which takes place in the pelvic lymphatic glands in attacks of this kind, is generally impossible of detection.

All syphilographers are now agreed respecting the infectious character of the blood of syphilitic persons. That this is so was long ago inferred from the fact that the semen of an infected person, a direct secretion from this fluid, is capable of imparting the poison, not only to the embryo, but often also to the mother. Of late years, however, this matter has been tested by an appeal to experiment, so satisfactory in its results as to leave not a shadow of doubt upon the subject. Professor Pellizari, of Florence, in 1860, inoculated his friend, Dr. Bargioni, with blood taken from a vein in a syphilitic woman, and the operation was followed, within sixty-five days, successively, by the development upon the skin, of a papule, an ulcer with an indurated base, and a specific areola. The specific poison of syphilitic vaccine matter has been shown by Viennois and others to reside exclusively in the blood. When care is taken to keep the lancet perfectly free from this fluid in performing the operation, or when the operation is done with lymph or a scab destitute of blood, no risk of infection whatever is incurred.

Of the propagation of syphilis by kissing I have seen a number of instances. The last that I had occasion to witness was one of hard chancre upon the lip of a young lady. It was followed in a few weeks by a hard glandular swelling at the base of the jaw, and subsequently by well-marked roseolar and papular eruptions of the skin, extending over a large portion of the body, rheumatic pains in the joints, and ulcers of the mouth and throat. About eighteen months after this occurrence, for which she was treated by my friend, Dr. Maury, this lady married, and in due time was delivered of a syphilitic child which perished within less than eight weeks after its birth in a state of profound emaciation, with an icterode condition of the skin and ulcers upon the vulva and at the anus.

The transplantation of teeth from the mouth of one person to that of another, extensively practised in the latter part of the last century, was abandoned because it was occasionally the means of communicating syphilis. How far skin-grafting may always be a safe operation remains to be determined. Doubtless syphilis might readily be conveyed in this way, as, for instance, when the graft is transferred from the amputated limb of one person to the

body of another. When the system is thoroughly saturated with syphilitic virus, it is easy to conceive that contact with any of the secretions, the blood, and the different tissues might spread the infection. Among the poorer classes of people whole families sometimes suffer from this disease from using the same utensils, sleeping in the same bed, wearing the same clothes, and wiping with the same towel.

3dly. Of the *prevalence* of syphilis in different parts of the globe no correct estimate can be formed from any data at present before the profession. All that is known, with any degree of certainty, is that it exists everywhere, both among civilized and barbarous nations, where promiscuous sexual commerce is practised. The inhabitants, however, of the tropical regions of the world seem to be more liable to it, and to suffer from it in a greater degree, than the people of the colder and more northern regions. It is particularly common in China, the East Indies, Southern and Western Africa, Mexico, and South America. In some of these countries, as well as in others, it occasionally assumes an endemic or even an epidemic form, affecting, either rapidly or more or less gradually, large portions of the inhabitants from the most humble to the most exalted. The first epidemic of syphilis of which we have any authentic information occurred near the close of the fifteenth century, in France, from which it spread successively and rapidly over Germany and Italy, in the latter of which it reached its climax during the siege of Naples by the French under Charles VIII., in 1494. Dalmatia, Macedonia, and Greece did not escape the scourge. England, Ireland, and Scotland were also visited, but not to the same fearful extent as the continent of Europe. The epidemic lasted for many years, causing great alarm and immense suffering, with a considerable amount of mortality, both directly and indirectly. The distemper, contracted for the most part in the act of coition, was characterized, at first, by ulcers upon the genital organs and by glandular swellings in the groins, and, subsequently, by various kinds of eruptions, pustules, and sores of the skin, ulcers of the throat, gummy tumors, nocturnal pains, and nodes, caries, and enlargements of the bones. Phagedenic and gangrenous actions were of common occurrence, often eventuating in loss of the lips, the nose, and the genital organs. From all accounts it retained its pestilential character for about seven years. Many children contracted the disease by sucking their infected mothers or nurses.

As an endemic, syphilis has appeared in various parts of the world. In corroboration of this assertion, it may be stated that, only a comparatively short time ago, the disease was so common in East Prussia, Lithuania, and the adjoining provinces of Poland and Russia, among all classes of people of both sexes, young and old, that its prevalence could only be accounted for upon the supposition that it was an endemic affection, capable of being communicated by other methods than by sexual intercourse. While, according to Dr. Schnuhr, the historian of the endemic, chancres and buboes were comparatively rare, condylomatous excrescences, rhagades, cutaneous eruptions, and ulcerated sore throat were exceedingly frequent, especially the first, which were often found in great numbers on different regions of the body. Among the poorer classes whole families sometimes suffered in this manner, from the oldest to the youngest, owing, as was supposed, to the fact that all the inmates of the infected houses not unfrequently occupied the same bed, and were brought in contact with one another in various ways.

It was only last year—1873—that an endemic of syphilis occurred at Brives, a little town in France, fifteen women, nine men, and ten children having become affected in rapid succession. Great excitement for a time prevailed, wife accusing husband, and husband wife of conjugal infidelity, when it was at length ascertained that the cause of all the trouble was a widwife, who had a chancre upon one of her fingers, contracted in the exercise of her profession, and who had thus carried the poison from house to house.

It would be a matter of deep interest, and, in a practical point of view, of the greatest possible value, if we could ascertain, even approximately, the extent of syphilis in our cities and larger towns; but for such a decision there are, unfortunately, no data. It may, however, be assumed that it is of gigantic proportions; that it exists in many of the best and noblest families of the land; that, since the establishment of railway travel, it has penetrated every rural district; and that it is poisoning and slowly but surely undermining the very fountains of life in every direction, sowing the seeds of death among our people, and gradually deteriorating the national health. It is no slander to assert that many of the cases of the disease, brought under the notice of the practitioner, occur in the higher walks of life, among married as well as among single men. Out of a population of forty

millions, the present number of inhabitants in this country, it is safe to assert that nearly two millions are at this moment infected with the syphilitic virus. This estimate tallies very closely with that of Mr. Holland, of the number of syphilitic subjects in the United Kingdom of Great Britain; and what is true of that country may fairly be assumed to be true of our own.

Syphilis is always a common affection among soldiers and sailors. During our late war, within a period of about two years, that is, from 1861 to 1863, nearly 23,000 cases of the disease occurred among our troops. In the French army, in 1862, there were, in that single year, 11,000 cases out of an active force of 300,000 men; and in the British service, during the same period, the proportion of cases was still greater. Soldiers stationed at barracks generally enjoy unusual facilities for contracting syphilis; and it is well known that the first thing a sailor usually does, upon reaching shore, is to take a glass of grog, and the second to visit a house of ill-fame.

Of the extent of venereal diseases in the larger cities of the United States no statistics have ever been furnished, and it would, therefore, be useless to indulge in any speculations respecting it. Of its extraordinary prevalence in London, some idea may be formed, from the number of cases met with at its principal hospitals, dispensaries, and other charitable institutions. Thus, of the 6000 out-door surgical patients annually treated at St. Bartholomew's Hospital, nearly one-half are said to labor under some form or other of these affections. At Guy's Hospital 25,000 cases of a similar character are annually prescribed for; while at the Royal Free Hospital they amount to the frightful number of 42,705, or 117 cases on an average a day. At King's College, University College, St. Mary's, Westminster, Middlesex, and St. George's Hospitals, the number of cases varies from 20 to 33 per cent. of all the surgical out-patients daily seen at these institutions. At the Seamen's Hospital, Dreadnaught, the number of cases daily treated is about fifty, consisting chiefly of sailors of the merchant service. At the Lock Hospital upwards of 200 out-patients, the subjects of venereal diseases, are daily observed; and at St. Thomas's Hospital one-half of the out-patients are similarly affected.

Of 100 eye patients, who, on an average, apply every week for relief at St. George's Hospital, 30 per cent., according to Mr.

Tatum, are syphilitic; and at the Ophthalmic Hospital, Moorfields, the largest eye infirmary in London, if not in the world, Mr. J. Hutchinson estimates the number of syphilitic cases at 20 per cent. At the hospital for throat diseases the number of syphilitic cases is about 15 per cent.; and in the various metropolitan charities for skin diseases one-eighth to four-fifths.[1]

After these appalling figures, can we wonder at the enormous rate of infantile mortality which pervades London and other large cities both of the Old and of the New World? Like apples which rot upon the tree before they are ripe, the children of these infected persons drop dead from their mother's womb, or, if they are born alive, they are sure to perish soon after birth.

All attempts made to ascertain the number of prostitutes in the principal cities and countries of the world have signally failed. Indeed, the results of such inquiries could only, at best, be approximately correct. In New York the late Dr. Sanger, writing in 1858, places the number at 6000. Since that period the population has much increased, with, of course, a corresponding augmentation of the "social evil." Dr. M. H. Henry, the able editor of the "American Journal of Syphilography and Dermatology," informs me that clandestine prostitution prevails to an enormous extent in New York, and it is reasonable to suppose that this is also true of the other large cities of the United States. Like causes, operating in large cities, produce like results. In Paris the number of courtesans is set down by a recent writer, Mons. Anner,[2] of Brest, at 60,000; and he declares that the whole of these creatures put together do not produce seventy-five children a year; an appalling loss to the State, exclaims the philosopher and the political economist! In London the number of prostitutes, private and public, has been variously estimated at from 50,000 to 80,000; while in the United Kingdom of Great Britain it is supposed to amount to nearly 400,000! Of these women it may reasonably be inferred that from fifteen to twenty per cent. are laboring under venereal diseases, which they must necessarily communicate to the men who cohabit with them, and these men, in turn, to other women, or, if they are married, to their wives, and through them again, in the case of syphilis, to their offspring. Thus, both sexes become so many centres of

[1] The Westminster Review, p. 101-2, July, 1869.

[2] Etude des Causes de la Mortalité Excessive des Enfants, p. 65, 1872.

inoculation and so many plague spots, far more pernicious in their influence upon the national health than the pestilence that "walks in darkness."

The *mortality* from syphilis is influenced by various causes, the principal of which may be thus stated: the constitution of the patient, as to whether it is naturally vigorous or the reverse; his habits of life, as to whether they are regular or irregular, temperate or intemperate; the nature and amount of his food, as to whether it is nutritious and sufficient in quantity; his occupation; the air he breathes, the clothes he wears, the amount of labor he performs, and various other circumstances which will readily suggest themselves to your minds. Whatever has a tendency to impair the digestive and assimilative functions, and to exhaust the vital powers, must necessarily augment the dangers of the disease and lessen the chances of ultimate recovery. Although among the better classes of society few persons perish from the immediate effects of the malady, many die from the more remote effects, and from the effects of intercurrent and interdependent disorders, induced by the injurious agency of the syphilitic virus. Here, again, unfortunately there are no statistics to guide us in forming even an approximate estimate; but, taking into consideration the great damage sustained by the general system during the progress of this malady, the malign influence it exerts both upon the blood and the solids, the derangement it causes in the secretions, and the predisposition it establishes to morbid action in the more important internal organs, the mortality must be very great. A state of constitution is thus engendered, known as the "syphilitic cachexia," clearly denotive of the sad havoc that has been inflicted upon the general system, too often the forerunner of a speedy dissolution. The whole system is surcharged with the specific virus, the powers of life are completely sapped, the countenance has a sad, careworn, and cadaverous expression, assimilation is suspended, the circulation and innervation are at their lowest ebb, and every species of treatment is utterly useless. When this state of the system exists, even in a comparatively slight degree, the dangers from ordinary diseases, accidents, and surgical operations must be vastly augmented.

Race exerts an important influence upon the progress and termination of syphilis. The blacks on the western coast of Africa, and the colored people of this country are notoriously bad subjects. The inhabitants of the islands of the Pacific, and

many of the Indian tribes of North and South America, are rapidly disappearing under the effects of this disease. The Sandwich Islands are in great danger of being completely depopulated by it. The mortality from syphilis on these Islands is absolutely appalling. Dr. John G. Brooks, writing in 1873, affirms that the spread of this disease has been so rapid, and its consequences so fatal, that in less than a century the population has been reduced nearly 75 per cent. Of the truth of this statement there can be no doubt, as it has been fully confirmed by the investigations of other observers, especially of Dr. G. Trousseau and Dr. McKibbin, of Honolulu. Although both gonorrhœa and syphilis existed prior to the arrival of Capt. Cook in 1778, the latter malady does not appear to have possessed the malignancy which it assumed soon after the sailors began to cohabit with the native women. Owing to the ignorance of its true nature, no successful attempts were made to arrest it until after the arrival of the missionaries in 1820. During this interval, a period of upwards of forty years, many thousand persons fell victims to its ravages. It is an interesting fact, fully settling the question of the unicity of the disease, that the primary affection almost invariably manifests itself in the form of a soft, simple, or multiple sore, and suppurating bubo, furnishing auto-inoculable pus. Hard chancre, especially in women, is almost unknown in the Islands.

The mortality from this disease in young children, as already hinted, is very great. In Philadelphia and New York the loss of life from this cause, counted for several years, in children under five years of age, is 80 per cent., if we may credit the statements made by Dr. Sturgis in the "American Journal of Syphilography." The number of abortions and miscarriages occasioned by the syphilitic poison is incalculable. In one instance, recently under my observation, a highly respectable lady, the wife of a government official, a very small, slender, delicate woman, has, during her married life of fourteen years, had five living children, nine abortions, and two miscarriages. Of the five children born alive only three are now living, and the youngest, two and a half years old, is exceedingly feeble and unhealthy. The other three children that were born alive died young. Three abortions have occurred since the birth of the last child; several between him and his elder brother, now upwards of twelve years of age. The father is a man of large size, of stout, muscular development, apparently in perfect health. I

have not made any inquiry about the existence of a syphilitic taint in the parents, their social position forbidding it. In another case the woman had, successively, thirteen abortions and miscarriages. She was at length delivered of a child at the full term, which was seized soon after birth with jaundice, and died in less than ten days of umbilical hemorrhage. Every obstetrician at all extensively engaged in practice can bear testimony to the frequency of these accidents. Dr. Barnes, of St. Thomas's Hospital, London, says, "it is not an uncommon thing for a woman to suffer five, six, seven, or more abortions and premature deliveries, and never to have a healthy child."[1]

It has frequently been asserted that the syphilis of to-day is a much milder affection than the syphilis of former times. Its epidemic outbreak towards the close of the fifteenth century, as has already been stated, was attended with peculiar virulence. It was, in fact, in more senses than one, a genuine pestilence, killing large numbers of persons, and causing everywhere the most terrible consternation. The sufferers were regarded as outcasts, shunned alike by society, their families, and their friends, under the conviction that the very air they exhaled from their lungs was contaminated, and, therefore, capable of propagating the infection. The treatment was altogether empirical, and immense numbers perished who, under the modern system of treatment, might have been saved. Little attention was paid in ancient times to hygienic measures, or even to a proper regulation of the diet; and, as to the iodides, as they are called, they were of course unknown. Bad forms of syphilis are by no means uncommon even at the present day; but they are met with chiefly among the lower classes of prostitutes, sailors, and lascars, whose health has been vitiated by all kinds of excesses, by insufficient food, by mental distress, by foul, damp air, and by analogous causes which it would be needless to specify.

4thly. We may next inquire briefly into the *indestructible* character of the syphilitic virus. How long does this infection last? Do its effects ever die out? Is the taint of the system thus engendered eradicable by treatment? These are startling questions, answered differently by different observers, and, therefore, far from being satisfactorily settled. The idea has occasionally been advanced that syphilis, like smallpox, measles, and scarlatina, is a self-

[1] Report on the Extent of Venereal Diseases, p. 26.

limited malady, tending, in persons of a sound, vigorous constitution, to spontaneous cure; but such a view is certainly not borne out by the facts of the case. The disease, if left to itself, never wears itself out; its character may be altered or modified, but the poison, like an enemy in ambush, still lurks in the system, ready to explode, with full force, upon the slightest deterioration of the general health. I have repeatedly witnessed cases in which the poison remained in a state of latency for ten, twenty, thirty, and even forty years, the individual being, apparently, perfectly well all the time, when, either suddenly or gradually, from some intercurrent disease or accident, it broke out in some particular structure, tissue, or organ of the body, perhaps selecting a spot hardly the size of a dime or twenty-five cent piece for the theatre of its operation, and the development of its zymotic action. The reason, probably, why such cases are not more frequently met with is that life is destroyed before the virus is placed in a condition for the exhibition of its peculiar effects. Judicious medical treatment and proper hygienic observances will go far, in a person previously in sound health, in maintaining the poison in a latent condition, or, what is the same thing, preventing its zymotic and explosive action. The iodides, as they are termed, although they are not, in the true sense of the word, specifics, yet they approach this property as nearly as it is, perhaps, possible for any medicines to do, quinine and arsenic, as antiperiodics, not excepted. They are remedies of inestimable value; but even these, however judiciously or perseveringly employed, seldom, if ever, completely eradicate the disease: they may, and often do, at least for a time, arrest its progress, and improve the general health; but sooner or later, upon the slightest deterioration of the system, the specific phenomena again appear, either in a similar or different livery, and thus the case may progress for an indefinite period, the patient being either finally worn out by it, or perishing from some intercurrent disease. In the poorer classes, more particularly in the ill-fed, half-starved, overworked, and in the lower and more degraded orders of prostitutes, even a temporary cure, or a transient restraint of the zymotic action of the poison is not always possible, and certain it is that such persons are seldom, if ever, permanently cured. On the contrary, many of them die early, either from the direct effects of the disease, or from intercurrent affections, to which the system, weakened and degraded by the virus, now falls an easy prey.

5thly. If the statements now presented be true, it must necessarily follow that a disease, the specific principle of which remains so long in the system, must have, so to speak, many outgrowths, hanging, like Lethe, upon its outskirts, and exhibiting themselves in a great variety of forms, often described, as so many separate and independent affections, under different names. What is called *scrofula*, struma, or tuberculosis, is, I have long been satisfied from careful observation of the sick, and a profound study of the literature of the subject, in the great majority of cases, if not invariably, merely syphilis in its more remote stages. It is, in short, a proteiform malady, capable of assuming a great variety of forms, often as difficult to distinguish as it is to treat them. In its original sense, the word struma had a very limited signification. Hippocrates, Galen, Celsus, Oribasius, Ætius, and other early authors, restricted it to glandular enlargements of the neck, axilla, and groin. The word scrofula, for centuries past in such common use, has, as is well known, a special import with respect to the deformed condition of the neck, assimilating it to that of a swine. At the present day the affections included under this denomination amount to upwards of twenty. Among the more common are chronic enlargements of the lymphatic glands, various eruptions and ulcerations of the skin, embracing the milder forms of lupus, chronic abscesses, especially psoas and lumbar, Pott's disease of the spine, psorophthalmia, chronic amygdalitis, caries and necrosis, ozæna, certain inflammations of the eye, known as strumous, coxalgia and white swelling, as it was formerly called, onychia maligna, otorrhœa, rickets, arachnitis, hydrocephalus, pemphigus, sycosis, keratitis, and the notched and irregular condition of the teeth of infants and children, so ably described by Mr. Hutchinson, of London. The affinity of scrofula and phthisis is now well established. That all those affections are of syphilitic origin I will not pretend to assert, but that most of them are, I am abundantly satisfied from personal experience. It must be within the recollection of every one of the older members of this Association, that many of the diseases formerly designated as scrofulous have, thanks to the researches of modern laborers, been proved, beyond the possibility of doubt or cavil, to be of a syphilitic nature. In the early part of my professional life, I was accustomed, in common with older and wiser men than myself, to look upon every person who had lost his nose by disease, whose nostrils exhaled a fetid odor, who

had been deprived of his palate, or who had obstinate sores upon the skin, caries, necrosis, or enlargement of the bones, as laboring under scrofula, considered as a distinct and independent malady. Closer observation and a riper experience, both private and hospital, have shown me the fallacy of those views, and proved that these and many kindred affections were then, as they are now, of a purely syphilitic character. The doctrine that scrofula is generally, if not uniformly, merely a transformation, a degeneration, or a remote effect of the syphilitic virus, was entertained, long ago, by Astruc, Rosenstein, Camper, Stoll, Selle, Portal, Alibert, Richerand,[1] and others, and has found its ablest advocate, in our day, in Lugol, of Paris, in his great work, entitled "Researches on Scrofulous Diseases," published upwards of thirty years ago. No one can read this production without rising with the conviction that its author was a most accurate and patient observer, a truthful recorder of facts, and a man of the highest analytical genius and powers of generalization. The vast progress that has been made within the last third of a century in the study of syphilis, considered in its various forms and phases, has done a great deal in reconciling the conflicting views that formerly divided the medical world upon the subject, by inducing practitioners to regard it in the light of modern experience. The powerful minds that have been directed to these investigations have cleared away a vast amount of rubbish, and firmly established the fact, now universally recognized, that the syphilitic virus is capable of infecting every particle of living matter, and, consequently, of producing changes in the organs and tissues of the most diverse character, not even dreamed of forty years ago.

It has been argued that, because scrofula is not, like syphilis, a contagious or inoculable disease, it cannot, therefore, be of a syphilitic origin. Such an assertion simply proves nothing; it is, in fact, a mere begging of the question. The force of the vaccine virus is much diminished, and, in many instances, entirely lost, after several generations of vaccination, and the same is true of all infectious or contagious matter whatever. Its natural tendency is, in time, to lose its virulence, and eventually to die out, or to part with its specific properties. Scrofula, however, is generally, like syphilis, an hereditary affection. In how many generations it may retain its specific powers before it is finally deprived of them,

[1] Diction. de Méd. et Chirurg. Pratique, v. xiv. p. 581.

we have no means of determining. The children of phthisical parents are almost invariably strumous, and the taint thus engendered often runs through several generations, uprooting, not unfrequently, entire families. On the other hand, it sometimes skips a generation, and reappears in the next succeeding one, just as family likenesses sometimes do: still it is scrofula, and nothing but scrofula.

Lastly, the effects of treatment lend powerful support to the doctrine of the consanguinity of scrofula and syphilis. The efficacy of the iodides and of mercury in the treatment of scrofula is familiar to every practitioner, and the same remedies, as is well known, are almost as truly entitled to the term "specific" in the treatment of the tertiary and quaternary forms of syphilis as quinine in the treatment of intermittent fever and malarial neuralgia. The active ingredient in Swaim's panacea, which has acquired a world-wide celebrity in the treatment of the so-called scrofulous complaints, is bichloride of mercury, the article which has effected such wonders in the cure of the struma of certain royal personages in Europe, South America, and other countries; men who attested their gratitude to the inventor of the panacea by costly presents in jewelry and in valuable testimonials.

To show the intimate connection between scrofula and syphilis, I shall here relate, from my own practice, the subjoined cases, which, not many years ago, would have been regarded as of a non-syphilitic nature.

A married man, thirty years of age, and the father of three children, consulted me last December on account of a catarrh of the nose, from which he had suffered from early childhood. He takes cold very easily, and wears the thickest and warmest garments to protect himself from atmospheric vicissitudes. The discharge from the nose is generally very profuse and fetid, despite the frequent use of the douche. He has one brother and four sisters, who are all similarly affected. His father, who died at the age of thirty-five from the effects of external injury, was always in delicate health, and the subject of ozæna. The mother was always healthy. The brother had three children, one son and two daughters, who, although well formed, and apparently healthy, are, nevertheless, affected with ozæna, attended with offensive discharge. His wife has had repeated abortions.

A girl, six years old, the daughter of a dissolute man, was brought to me in May, 1873, by her uncle, a medical practitioner,

on account of ulceration of the palate, with destruction of the tonsils, an opaque speck on the cornea of the right eye, otorrhœa, ozæna, a sore on the inside of the left ankle, and enlargement of the tibia, all of upwards of one year's standing, and pronounced by two old and experienced physicians in the town in which she lives to be scrofulous. The upper front temporary teeth are much decayed, and a permanent one, the only one cut, is stunted and crooked. The child is sufficiently well-grown, but her complexion is muddy, and she is lame in her left leg, owing to its diseased condition. The mother is laboring under well-marked symptoms of constitutional syphilis. The work of Lugol, previously alluded to, abounds in cases of a similar kind. Diday, in his "Treatise on Syphilis in New-born Children and Infants at the Breast," relates a number of instances; and, in fact, there is hardly a writer on the subject who does not afford illustrations of a similar nature.

A case reported by Dr. C. Drysdale, of London, is admirably illustrative of the subject under discussion. A girl, twenty years of age, had notched upper incisors, interstitial keratitis, and scars at the angles of the mouth. During childhood she suffered from fits and abscesses of the thighs. Her mother, who was forty-two years old, and married at the age of seventeen, had been infected by her husband. She had falling of the hair and sore throat, with cutaneous eruptions, and miscarried soon after her marriage. The next child was healthy, and alive and sound at the age of twenty-four. The third child was still-born; the fourth, at three months, had snuffles, and an abscess on the buttock; the fifth lived only thirteen days; the sixth was still-born; the seventh, at the age of sixteen years, had glandular swellings in the neck, and was very weak and strumous-looking; the eighth, at twelve years, was very feeble and scrofulous; finally, the ninth, at five years and a half, was thick-lipped, pallid, and affected with cervical abscesses. Of eleven children born of this woman, only five were alive when the case was published.[1]

The connection between syphilis and phthisis, as cause and effect, has recently attracted much attention, and has been warmly advocated by a number of writers, among others by no one more ably than by my friend, Professor Furneaux Jordan, of Birmingham, England. I have myself long been a firm believer in this

[1] London Med. Times and Gazette, p. 287, 1868.

doctrine, and I cannot see how any one who has much experience in this class of diseases, or who has made himself familiar with the literature upon the subject, could come to a different conclusion. Mr. Jordan very justly says we can manufacture strumous disease at pleasure, since all that is necessary is to bring into contact two persons affected with hereditary syphilis, and they will be sure, especially if, in addition to this taint, they have a muddy complexion, to produce children, one of whom will have phthisis, another Pott's disease of the spine, a third coxalgia, a fourth enlarged glands, or hydrocephalus. If acquired be added, he further remarks, to the inherited syphilis, the result will be still more certain. "The frequency of so-called consumption," says Sir William Jenner, "and of cases of so-called scrofulous diseases in the child, that are also due to inherited syphilis, becomes daily more apparent."

But it is asserted that phthisis cannot be an offspring of syphilis because phthisis occurs in monkeys when confined in our menageries. All this is true, and yet it does not prove that the disease may not have such an origin. Has any one studied the habits of these animals in their native forests, in such a manner as to be able positively to assert that syphilis is not one of the disorders incident to promiscuous intercourse among them? It is a well-ascertained fact, established by the experiments of Auzias-Turene and others, that monkeys are remarkably susceptible to inoculation, and that not a few perish afterwards from the effects of phthisis. If, as Darwin declares, we are descended from these animals, is it not reasonable to suppose that they are subject to the same diseases as we are? Nay, further, may we not have inherited syphilis directly from them, as a legacy from our illustrious progenitors? I propound this question for the solution of the sophists.

It must be confessed that it is often difficult, and sometimes impossible, to get hold of the links necessary to construct the chain which connects the two diseases. The great obstacle consists in obtaining satisfactory information concerning cases extending back a number of generations to persons long since dead. Parents who have syphilitic children are reluctant to acknowledge the fact. I have often had occasion to notice this, not only in private, but in hospital practice. Women, in particular, are prone to conceal everything affecting the character of their off-

spring, especially when it relates to so delicate a matter, however closely they may be interrogated.

It is but justice to say that many of the most illustrious pathologists of the present day, in all parts of the world, still adhere to the old notion that scrofula is essentially a disease of the general system, dependent for its development, not upon a syphilitic taint, but upon various debilitating causes, giving rise to a depraved condition both of the blood and the solids, and, as a natural sequence of this condition, to tuberculosis, or actual deposits of tubercular matter. I cannot help referring here to a remark of Richard Wiseman, Surgeon to Charles I. and Charles II., as illustrative in at least one respect of my own views upon the subject under discussion. In speaking of scrofula, in his elaborate chapter upon that disease, he says external accidents, as blows and falls, are often occasional causes, but they always presuppose the existence of a predisposition to its development; and that this is true is, I am satisfied, most thoroughly established. Without such a predisposition, germ, or morbid ailment in the system, scrofula cannot possibly arise, no matter what injury might be inflicted, or to what hardships and depressing influences the body might be exposed. How far this predisposition is due to the syphilitic poison, I have already repeatedly affirmed in the course of this address.

A few remarks in regard to the prevalence of scrofula must close this branch of the subject. Here, again, we have to lament the want of reliable information, so desirable in the settlement of a question of such magnitude and importance. That the disease is widespread, that it has a deep and an abiding hold upon the human race, and that it is annually causing a frightful mortality, either directly or indirectly, no one at all acquainted with this malady will, for one moment, doubt. I assume that upon this subject all enlightened practitioners are agreed. How extensively it prevails in this country is shown by the fact that of the 6000 newspapers published in it, there are very few which do not advertise some remedy for its relief.

Of the extraordinary prevalence of scrofula among some of the royal families of Europe and South America, some idea may be formed from the numerous costly presents received by a late celebrated charlatan of this city on account of the cures which he is said to have effected with his Panacea, still in such frequent use in this and other countries. The ghastly pictures which illus-

trate one of his brochures, abounding in testimonials from distinguished physicians, clergymen, Congressmen, and judges of courts, clearly prove that his cases of scrofula were, for the most part, if not in every instance, simply aggravated cases of syphilis.

In the United Kingdom of Great Britain, scrofula, says Mr. Richard Barwell,[1] a name well known in America, is so common that it would be below the truth to affirm that at least three-fourths of the people have the seeds of that malady in their constitutions. The Registrar General's Returns, continues this writer, show that for the week ending January 2d, 1864, 224 persons, chiefly children, died within that period of one particular form of scrofula in London alone. Such facts prove that there is a blight upon the children, transmitted from the parents, "rendering their life sickly, their death premature." Appalling as they are, they attract little or no attention. A great pestilence, like cholera, smallpox, or typhus fever, startles a whole community, and every one asks for a remedy; the church offers up her vows to God; and the physician is entreated for his aid and counsel; but when a pestilence, like struma or syphilis, stalks about in our midst, poisoning the very fountains of health and life, people fold their arms and look on in blind unconcern. Sir Astley Cooper, upwards of a third of a century ago, in speaking of this disease, remarked: "I do not exaggerate when I say that within this last year I have seen 500 cases of scrofulous affections; never a day passes without my seeing a case, and frequently three or four."

"Strumosis and tuberculosis," says Sir William Jenner,[2] "have no place in the Registrar General's Returns; and yet to the preexistence of these diseased states, in a large proportion of cases, is due the death in scarlet fever, in measles, whooping-cough; and but for these states how large a number of cases of Bright's disease, hepatic disease, and puerperal mischief would never have occurred." In Great Britain, according to the same distinguished authority, rickets causes, primarily or secondarily, more deaths than any other disease of childhood. "Although a preventable disease, yet," Jenner declares, "the mortality from rickets, from diseases which would not occur but for the preëxisting rickets and from diseases which would be trifling but for the coexisting rickets, is enormous. Laryngismus stridulus, chronic hydro-

[1] Guide in the Sickroom, p. 3, London, 1864.

[2] Practical Medicine of To-Day, p. 42, London, 1869.

cephalus, teething, convulsions, atrophy, disease of the spleen and liver, remittent fever, tabes mesenterica, spinal disease, bronchitis, diarrhœa, measles, whooping-cough—these are some of the names under which deaths, really due to rickets, appear in the Registrar General's Returns." Although Jenner repudiates the idea that rickets is a syphilitic disease, there are many able pathologists who positively attribute to it such a paternity, a view in which I fully and unhesitatingly concur. Rickets, in a large proportion of cases at least, is only, as has been justly observed by a foreign writer, the grandchild of syphilis.

It may be assumed, as an incontrovertible fact, that scrofula is most common wherever syphilis has the firmest hold upon a people. It never was more rife than it was for the first hundred and fifty years after the great syphilitic epidemic near the close of the fifteenth century, which, as was previously stated, affected vast numbers of persons both on the continent of Europe and in the British Isles. The disease is exceedingly frequent in the Sandwich Islands,[1] in the East and West Indies, in China, Japan, and Africa, where syphilis is known to prevail in its worst forms. Among some of our Indian tribes it is a very common disease, and the colored races of the United States are, as is well known, remarkably subject to it.

There is one form of scrofula which, although formerly very common, and remarkable as having given rise to the name by which it has for ages been best known, has greatly decreased in frequency, and, in some regions, almost wholly disappeared. I allude to glandular swellings of the neck, axilla, groin, and mesentery. Of these affections, especially the first, which were exceedingly common in my early professional life, and which have always served as the characteristic types of struma, I have for years past rarely met with any cases. If I were asked to what this change is due, I should unhesitatingly say change of treatment, consisting mainly in the more judicious use of mercury. There was a time when this remedy was almost exclusively relied upon in the cure of this disease, and it was during the reign of the mercurial treatment that scrofula of the lymphatic glands, especially of those of the neck, was at its greatest height.

In Ireland, where, in consequence of the influence of the authority of the late Mr. Colles, this agent is still very generally

[1] Dr. McKibbin's letter to me, April 4, 1874.

employed in the treatment of syphilis, the "swelled neck," as I am informed by my friend, Dr. McDonnell, an eminent surgeon of Dublin, and as I myself ascertained from personal observation during my visit to Europe in 1868, is still of very common occurrence. In England, on the contrary, where a more rational mode of management obtains, the affection has greatly decreased in frequency and severity, and this is also true of this country, and of continental Europe generally.

Mercury was for centuries looked upon as the touchstone in the treatment of syphilis, and the extent to which salivation was generally carried, it is difficult at the present time to credit. It was simply fearful. The remedy was administered in enormous quantities, and was, therefore, not unfrequently more destructive than the disease it was intended to relieve. Wiseman[1] directed the patient to take from twenty to thirty grains of calomel at a dose, to be followed by a few grains of turpeth mineral, the prescription to be continued until, to use his own words, his "chops swelled." This, as he informs us, was the mildest course, however slight the attack.

Dr. William Salmon, in his "Ars Chirurgia," the like, to use his own expression, of which was never yet published in any language, issued at London, in 1699, in speaking of the treatment of syphilis, strongly recommends, as the greatest of all internal "salivatories," calomel, or, as it was formerly called, mercurius dulcis, in doses varying from twenty to thirty, or even forty grains, given every night at bedtime until the remedy begins to show its specific effects upon the salivary glands, when it is to be laid aside, to be resumed, however, in the event the flow is not sufficiently copious. The same author also recommends the inunction, at one sitting, of two ounces of mercurial ointment, and the employment, if necessary, of mercurial fumigations. When the system was fully impressed, the flow of saliva gradually increased for eight or nine days until it reached its height, "which," says the good Salmon, "in persons of moist and gross habit of body may come to four, five, or six pints in a day and night, and to others in a less proportion." The salivation generally lasted from twenty to thirty days, and was, as might have been expected, attended with enormous swelling of the tongue, mouth, and throat; ulceration of the mucous membrane; and

[1] Chirurgical Treatises, Book viii., p. 507, 1686.

inflammation of the gums, jaws, and teeth, the latter of which often dropped out of their sockets.

Hermann Boerhaave, so justly distinguished in his day for his profound erudition and practical acumen, laid it down as a general maxim that, in the treatment of syphilis, every particle of fat must be drawn off from the body, otherwise the least possible remnant would lead to a relapse. "If," he remarks, "the patient spits three pints, or two quarts, in the twenty-four hours, it is sufficient; but if he spits less, more mercury must be given." Astruc,[1] in his work on the Venereal Disease, speaks of the creation of useful ulcers in the mouth by salivation, alleging that they are wholesome in promoting discharge, and purifying the system. Lombard, of Strasbourg, who wrote upon the same subject towards the close of the last century, states that the practice in France, even at that day, in the treatment of this affection, was to cover the body all over with mercurial ointment in order to cause profuse ptyalism. This frightful practice, which projected itself far into the present century, has, strange to say, still some adherents, although it is not carried to the extent it was in former times. The result of this inordinate use of mercury, in many cases, was the establishment of a degraded and poisoned state of the system, known as the mercurio-syphilitic disease, from the effects of which few persons ever perfectly recovered. To the English physicians and surgeons, engaged in the Peninsular war, the medical profession owes a deep debt of gratitude, and the world at large undying obligations for having shown that syphilis, in nearly every form and stage, may generally be satisfactorily, if not successfully, treated without the aid of this metal.

In regard to the alliance of *leprosy* with syphilis, there still exists the greatest possible divergence of sentiment. While some very able pathologists consider the two diseases as identical in their nature, as having, in fact, a similar origin and the closest interdependence; others, and these constitute by far the more numerous class, equally distinguished for their learning and intelligence, look upon them as essentially different affections, both as it respects their causation, march, symptomatology, and treatment. The link which connects syphilis and lepra is certainly not well defined. It is, however, acknowledged on all hands that the lepra of the present day, as it exists in Europe, especially

[1] Book iv., chap. vii., p. 71, 4th English edition.

in Norway, Sweden, and Denmark, is identical with the lepra of the East, so graphically described by Moses, and known in his day as a most contagious malady, against the extension of which he enacted the most stringent laws. I have already expressed the conviction that this disorder, as it occurred in two celebrated Biblical characters, was nothing but a bad form of syphilis—syphilis in its tertiary form, as it is now called—and it seems to me that no unprejudiced man can read the accounts of lepra of Northern Europe, as portrayed by the able pens of Boeck and Danielsen, of Norway, without being satisfied that it is merely a variety of syphilis, modified by the effects of climate, modes of life, and other causes. The people most liable to suffer from lepra in those countries are residents of the sea-coast, mostly sailors and fishermen of the lowest and most filthy habits, men who live principally upon salt food, and hardly ever wash themselves from one year's end to the other. That the disease, under such circumstancs, should generally be unusually obstinate, often intractable, and sometimes fatal, is not at all surprising. The symptoms of lepra strikingly resemble those of syphilis in its more remote forms. Among the more constant and prominent are, nocturnal pains in the legs, various kinds of eruptions of the skin, and red or livid tubercles, often terminating in ulceration, falling of the hairs of the scalp, eyebrows, and face, loss of the palate, nose, and tonsils, caries and necrosis of the bones, and, in short, all the more marked phenomena which characterize syphilis in its constitutional types. When we add to these lesions the fact that lepra is always hereditary, and not unfrequently infectious, it may, I think, fairly be assumed that, if lepra be not syphilis, it so closely resembles it as to render it impossible to assign to it any other plausible, much less distinct, paternity.

In the Sandwich Islands, where the population since 1832 has been reduced from 130,000 to less than 57,000 as shown by the last census taken in 1872, owing very largely to the effects of syphilis, leprosy has, during the last ten years, spread with fearful rapidity among the natives. From a letter kindly sent me by Dr. Robert McKibbin, of the Queen's Hospital, Honolulu, dated April 4, 1874, I learn that since January, 1865, 1212 persons affected with this disease have been sent to the settlement in Molokai, where, at the present moment, there are upwards of 700. In addition to these, large numbers, hidden away by their friends, have died at their own homes. "That leprosy has a close con-

nection with syphilis," says Dr. McKibbin, "I am quite satisfied; in fact, I consider it to be the chief cause of its rapid spread. I have had at the Queen's Hospital, and in my own practice, a large number of syphilitic cases terminate in this disease. Uncertain or mixed cases frequently present themselves, in which, as a rule, immediately, or very shortly after, the syphilitic symptoms give way to treatment, which they invariably do, thus often affording delusive hopes of recovery, symptoms of leprosy in its most virulent forms are ushered in, and the disease runs a more than usually rapid course, terminating, as it always does, fatally."

"My experience and observation," he continues, "clearly teach me to believe that leprosy, under certain circumstances, is contagious; hence, if for no other reason, persons affected with the syphilitic taint will, *cæteris paribus*, contract this disease when the healthy will escape."

Dr. G. Trousseau, a son of the celebrated French physician of that name, in a letter to me dated Honolulu, March 30, 1874, declares that, while he believes lepra to be a distinct disease, of all the cachexias the syphilitic is that which predisposes most to its development. Of its inoculability he is perfectly convinced. Dr. Trousseau and Dr. McKibbin agree in stating that the disease in the Sandwich Islands is of very recent origin, not extending back beyond about fifteen years. The leprosy of India, concerning which the English Government has lately instituted energetic inquiry, is, it would seem, a non-contagious but hereditary and incurable malady, the etiology of which is enveloped in complete obscurity, notwithstanding the labored attempts that have been made to elucidate it.

In attempting to form an opinion regarding the nature of lepra, we must not lose sight of the fact, universally admitted by the opponents of the identity of lepra and syphilis, that it is often extremely difficult, and sometimes utterly impossible, to establish a correct diagnosis between cutaneous maladies, such is their liability to run into and mask each other. The wisest and most distinguished dermatologist is not always exempt from this embarrassment.

6thly. The *treatment* of syphilis, the last subject it is proposed to examine, necessarily divides itself into curative and preventive, the latter including the consideration of prostitution and its effects upon the national health.

The first of these topics has already been sufficiently discussed

for the purposes of this paper. I have endeavored to show that, when the syphilitic virus has once taken full possession of the system, no mode of treatment, hitherto devised, is capable of permanently dislodging it, or of neutralizing its effects. All that can be done, even with the aid of the most approved remedies, as the different preparations of iodine and mercury, is to stay for a time its action; for, even under the most favorable circumstances as to health and regularity of life, it will be almost certain, sooner or later, to take on zymosis, and to break out into an open flame, fastening itself upon some particular portions of the body, and thus gradually, if not rapidly, undermining the general health.

If these statements be true, and no one, I am sure, will gainsay them, it necessarily follows that the prevention of the disease is a matter of far greater moment than the attempt to cure it after it has been developed. If proper precautions were observed in impure connections, much of the danger of inoculation might be effectually avoided. Cold water, simple or medicated with some astringent substance, as alum, sugar of lead, common salt, or chlorinated soda, used judiciously, immediately after the commission of the act, generally completely neutralizes or washes away the infectious matter, and thus insures immunity from future mischief. Few persons, however, are aware of the importance of such precautions, or, if they are, they neglect their employment until it is too late to reap any benefit from them. The condom offers but a feeble resistance in the act of copulation against the dangers of infection, and is comparatively little employed, except by men in the higher ranks of life. The sailor, the soldier, and the humble sensualist resort to no such device. The tar may occasionally use his bandana, but this affords no real defence against inoculation; nay, if we may credit his veracity, not even against the possibility of conception. It surprises one to learn that the condom, still in such common use in France, incurred the ill will of the Pope, who, in 1826, issued a bull condemning the invention as a means of counteracting the decrees of Providence, who wishes to punish prostitutes on account of their heinous sins! Did not a Pope once issue a bull against a comet, and did Martin Luther not throw his inkstand at the devil?

The treatment of syphilis by what is termed syphilization, originated by Auzias-Turenne, of Paris, in 1844, and since so

pertinaciously carried out by Sperino, of Italy, and Boeck, of Norway, besides being extremely filthy and disgusting, has been shown to be an entire failure. Dr. Adam Öwre, writing in 1868, declares that no permanent benefit has resulted from it even at Christiania, where it has been practised in many hundred cases within the last twenty-five years, with every possible care and assiduity, under the direct supervision of its great and enthusiastic advocate, Professor Boeck. Similar views have been expressed by other writers and practitioners. Of the insufficiency of syphilization to eradicate the poison of the disease, no better proof is needed than the numerous relapses which follow the operation, and the fact that the offspring of women while undergoing this treatment are invariably infected with hereditary syphilis, precisely as after any other mode of cure hitherto employed. There is no analogy between vaccination and syphilization. A few punctures suffice to complete vaccination; whereas syphilization requires hundreds, extending over a period of many months.

Inasmuch, then, as no preventive measures hitherto devised are at all trustworthy, inasmuch as the sexual passions must and will seek indulgence, and inasmuch as the greatest risks of infection occur at brothels or in houses of ill-fame, the question arises, how, or in what way, may these risks be reduced to their greatest minimum? A wide field for useful exertion is here opened. We send missionaries among the heathen in foreign lands, but neglect this fearful plague-spot at our own doors and at our own fireside. We think it a fine thing to convert a savage to christianity, and so it doubtless is; but we permit our own brother to contract a loathsome disease, one that will effectually poison not only his own system, but taint and infect his offspring unto the third or even unto the fourth generation. The only remedy for this evil is the licensing of prostitution, a remedy which has worked so well on the continent of Europe and in England as to deserve to be introduced into this country, where, as abroad, under proper restrictions, it could not fail to be productive of vast good in promoting the national health and lessening the mortality from numberless diseases more or less dependent upon the prejudicial effects of the syphilitic virus. To legalize crime, as prostitution has always been considered to be, is to arouse at once the worst prejudices of the public, and to excite the bitterest opposition, on the ground that such a measure

would tend to encourage vice and immorality. But would the licensing of brothels or houses of ill-fame really have such an effect? I answer unhesitatingly, No. On the contrary, it would tend greatly to diminish both, at the same time that it would greatly lessen the dangers of syphilitic infection. Viewed from this stand-point, a stand-point of a purely hygienic character, the question assumes a national importance, and it becomes our solemn duty, as the representatives of a great and learned profession, to look it squarely and boldly in the face, in utter disregard of the fact that it is tabooed in certain quarters or by certain classes of people who are entirely unacquainted with its merits. The prejudices that surround it must be swept away, and men must march to the front and discharge their duty, however much they may be abused or reproached for their conduct by the ignorant and the foolish. "Positive action must be organized to check positive evil, to promote the public good, and to heal the festering sore under which the country has so long groaned." All must lend a helping hand in the great enterprise, the physician, the legislator, the philosopher, the philanthropist, the churchman, and the politician; nay, woman herself should not be kept in the background. She, too, should give it her influence. The fact that the subject is attracting general attention in this country shows that our people are in earnest about it. In St. Louis, which has taken the lead in this matter, prostitution was legalized several years ago;[1] in Cincinnati attempts have been made in the same direction; the legislature of Illinois recently had the matter under discussion; and in January of the present year, the grand jury of Philadelphia, in its presentment to the court, urged the adoption of some legal measure for the protection of society against the spread of venereal diseases. In March last the

[1] Since this address was written, the legislature of the State of Missouri has seen fit to repeal the ordinance regulating prostitution in St. Louis, on what grounds does not exactly appear. Doubtless the prejudice of the religious portion of the community is entitled to the principal credit in bringing about this result; for we are told in an editorial in the *Missouri Medical Record*, of May 15th, that the system had acted most beneficially in the interests of the community and the welfare of the prostitute. Many of the inmates of the House of Industry, influenced by the ministrations of good men and noble women, had been seeking the "purer and better way," and had become so fully aware of the physical advantages arising out of the law, that not a few of them voluntarily subjected themselves to inspection, at their own expense, after the abrogation of the ordinance.

legislature of Pennsylvania took up the subject; an admirable address was made by a member, Dr. Cressler, and a bill was framed, containing numerous provisions for the suppression of this class of affections, so long the scourge and reproach of our race.

One very great difficulty in regard to the practical operations of a licensing law would be the framing of a bill of an entirely unexceptional character. Great judgment and care would be necessary in the selection of a proper title: if this be offensive, or too conspicuous, it would at once call forth opposition. My opinion is that the entire subject should be brought in, as it has been in England, under the head of the "Contagious Diseases Acts," a phrase not likely to meet with serious objection, as it would serve as a cloak to much that might otherwise be distasteful to the public. The word "licensing" should not be used at all in this connection, as its purport is liable to be misunderstood, many persons supposing that the "licensing law" is designed to encourage and extend prostitution, in the same sense that a licensed coffee-house, for example, encourages the use of liquor with its attendant vice and immorality. The word "regulate" would be better, but even this has its objections. The provisions of such a bill should be couched in the clearest language, and should be enforced and carried out by the fewest number of officers consistent with their due observance. City councils and city police authorities should be prohibited from serving on the board, the most suitable of which would be the so-called board of health. The examining physicians should be moral and well-educated men, appointed by the Board of Public Charities, with a liberal salary; they should be thoroughly acquainted with the nature of venereal diseases, and scrupulously conscientious in the performance of their duties. Inspections should be regularly made at least once every fourth day, or twice a week, and all women found to be unclean should at once be placed in quarantine, or under proper restraint, as the only means of preventing the spread of syphilis.

The greatest opposition to the enactment and the efficient enforcement of a law licensing prostitution would necessarily come from the clergy and other religious people, who, without understanding the nature of these diseases and their extensive prevalence, too often regard them as visitations of Providence, and every measure of this kind as an unholy attempt to "license shame," "legalize vice," and "encourage crime," and other twad-

dle, as unmeaning, when applied to such a serious matter, as it is unbecoming a Christian people.[1]

Regarding prostitution as a necessary evil, an evil which has existed from the earliest periods of society, and which must endure to the end of time, until the angel Gabriel shall sound the last blast of his trumpet to summon together a fallen world, it should be the duty of every right-thinking, rational, progressive man to do all he can towards the suppression of an evil far more pernicious in its influences and effects upon mankind than any of which we have any knowledge, drunkenness not excepted. In reflecting upon this subject, I am sometimes inclined to believe that prostitution is the normal condition of the human race. Or, if we reject this proposition, so offensive to good taste, it must be admitted, beyond the possibility of doubt or cavil, that the practice is so intimately interwoven with our social system as to form an essential part of it. In either event, the evil is a most sad one.

Sexual intercourse is an imperious necessity, implanted in our nature, for the gratification of which man will brave any danger, however great, to health and even life. Whether descended from the ape, or whether created in the image of his Maker, he is still an animal, who, but for the humanizing influences of civilization and Christianity, would be more savage and degraded than the wildest beast of the forest. If this postulate be admitted, it requires no argument to prove that prostitution is an essential necessity of society. If prostitution were abolished crimes of the most heinous and revolting character would be of incessant occurrence, and no virtuous woman would be secure from the assaults of the libertine.

"A large portion of the male population," says Sir William Jenner,[2] "are, at the age when the passions are the strongest, precluded by the necessity of their position from marriage. Under such conditions, either prostitution, seduction, or masturbation will be the prevailing vice. If by law public prostitution could be put down, the two latter of the three vices would undermine the health and lower the moral nature of the masses far more than

[1] Philadelphia Medical and Surgical Reporter, 1874. It affords me great pleasure to refer to this journal in connection with the discussion of this question, as it is one of the few medical periodicals in the United States sufficiently thoughtful and independent to place it in its true light before the profession and the world.

[2] Practical Medicine of To-Day, p. 46.

does the present prevalence of the social evil. This inverse relation in the prevalence of masturbation, illegitimate children, and prostitution, cannot be too strongly impressed on the public mind. All men have a repugnance to referring to these matters, but it is our duty to do it. On the attention of the so-called religious this duty should be especially enforced. Prostitution cannot be suppressed by law; perhaps ought to be if it could. But prostitution is necessarily accompanied by syphilis. Syphilis more often than has been commonly believed means death, death to the primarily syphilized and death to his offspring. The spread of this knowledge may have a little effect; but my experience has never yet made me acquainted with the case of a youth made continent by the fears of syphilis; but it has taught me that where a youth is deterred from promiscuous sexual intercourse by the mere fear of contracting disease, he, as a rule, gratifies his desire in even a more discreditable manner. The vicious gratification of a natural desire is the cause of syphilis. If every young man curbed his passions, syphilis might die out. Let teachers of morality and religion endeavor to impress on young men and lads, above all on the latter, the necessity of exercising this restraint. But until they have succeeded in their teaching, it is the duty of authority to prevent, as it could to a great extent, the spread of this terrible disease. Moral teaching may do something; the spread of knowledge and society can do almost nothing; but law could do much to diminish the mortality from syphilis. It could prevent the prostitute from plying her trade in the public thoroughfares, and thus keep temptation to some extent out of the way of the merely irresolute and thoughtless; it is a disgrace to authority that it does not frame and enforce such a law. Again, law could check, to a great extent, the wide diffusion of syphilis. A little has been done in this direction; more is being attempted; but something more than the 'Contagious Diseases Act of 1866' is necessary, if the community at large, and not only our troops, are to be benefited."

But it will be said that if prostitution be an evil, instead of licensing it, it should be stamped out. Where is the power to do this? Will the clergyman stamp it out with his Bible, his tracts, and his prayers? the philanthropist with his money and his kindly acts? the legislator with his laws? or the philosopher with his subtile arguments and finely-spun theories? As well might we attempt to dry up the Atlantic Ocean, or to arrest the

movement of the earth around the sun, as to attempt to arrest prostitution by such means.

Shall we accuse the clergy of hypocrisy, or of wilful concealment of the truth? Do they really think that legalizing prostitution is a means of encouraging immorality and crime? Are they not equally interested in the matter with the rest of our citizens? Have they no sons and daughters? Or are their children less exposed to the dangers of contamination than the children of other classes of men? If they will but seriously ponder this matter they cannot fail to see it in the light we do. Sin is no respecter of persons. It penetrates all classes of society, and enslaves alike the king in his palace and the meanest subject in his hovel.

The opponents of these laws, so wise and salutary in their tendency, base their arguments mainly upon the ground that they encourage vice and immorality, and restrict the liberty of the prostitute, both as an individual and as an citizen, and that, therefore, they are wrong not only in practice but in principle. But this is taking a very superficial view of the case. What would be thought of a man who went about deliberately scattering poison, and thus sowing the seeds of death? Is it less criminal to kill a person with the virus of syphilis than with the virus of smallpox, scarlatina, plague, chlorea, or ship fever? Are there not stringent laws for the prevention of the spread of these and other contagious diseases? When yellow fever prevails in a foreign country is quarantine not strictly enforced against all vessels touching at our shores? When the cattle-plague prevails is not the importation of cattle strictly prohibited? Prostitution is an occupation, a profession, a trade, a business; and is the degraded creature who follows it and infects those who hold commerce with her any better than the baker who sells unwholesome bread, the woman who poisons her customers with decayed vegetables, or the butcher who sells infected meat, a crime which in the dark ages used to be punished with death? These people do not complain when the market inspector comes along, and condemns their rotten goods, because they know that he is only carrying out the injunctions of the law; a law made especially for the benefit of the citizens of the State, who would otherwise be incessantly exposed to the danger of infection in its very worst forms. Is it wrong to shoot a rabid dog, or to restrain an insane person armed with a deadly weapon, dealing his blows right and left in his mad

career? Has history bequeathed us no lessons upon this subject? Has not Moses, the greatest and wisest legislator the world has ever produced, laid down definite sanitary regulations in regard to persons infected with venereal diseases? Finally, shall we forget that a sexual sin committed to-day may prove a curse to our offspring generations hence?

But apart from the foregoing considerations there is another, which, from its important bearings upon the courtesan herself, should not be overlooked. Her life is generally a short one, often not exceeding three, four, or, at most, five years. Steeped as she commonly is in misery, poverty, and degradation, she soon seeks consolation in hard drink, and finally sinks under the combined influence of the syphilitic poison and alcoholic stimulation. The prostitute who is regularly inspected has a much better chance of being cured of her distempers than one who is left to herself, not to say anything of the chance of her eventual reformation under the humanizing influence of kind, soothing treatment, the knowledge and conviction that the world has not entirely forgotten her, or treats her as an outcast—as a man and as a God-forsaken creature. We have the testimony of Mr. Acton and other observers that the kind treatment shown these poor women by their professional and other attendants has been the means of restoring many of them to virtuous courses, who would otherwise have been lost; not a few becoming afterwards the wives of sailors, and of the lower orders of mechanics and tradesmen.

An appeal to the operations of the license laws in foreign countries will convince the most sceptical of their beneficent influence. Everywhere, in city and in town, in hospital and in barrack, wherever they have been enforced, their practical workings have been of the most salutary character in diminishing syphilitic infection, and improving the moral and physical condition of the prostitute.

At Aldershot, Woolwich, and Windsor the diminution of venereal diseases among the military has been most marked. Mr. Deverell, of the Portsmouth Royal Hospital, at a recent public meeting declared he had watched the progress of the Contagious Diseases Acts from the first, in their operation upon the sailors, and he believed that a greater blessing had never been conferred upon the army and navy. In the Ionian Islands, at Malta, and in the Islands at Corfu, Zante, and Zephalonia, where

the registration and inspection of prostitutes are rigidly enforced, venereal diseases have almost wholly disappeared. In this connection the case of the "Calypso," an English ship, will be found to be of great interest. This vessel during her sojourn at Honolulu, in the Sandwich Islands, where there are no restrictions, had 33 out of 153 of her officers and men down with these diseases. She afterwards went to Tahiti, where, under the supervision of the French Government, all prostitutes are regularly examined, only three cases occurred during the four months she remained there, notwithstanding nearly all the men had lived on shore. In 1860, as I have learned from the letter, previously referred to, of Dr. Robert McKibbin, of Honolulu, a law was enacted to mitigate the evils arising from prostitution in the Sandwich Islands, providing that all women living by prostitution should be placed under the supervision of the police, and subjected to regular periodical examination by a medical man, and, if found diseased, sent to hospital for treatment. Under this management, which was tolerably rigidly enforced for about ten years, the amount of syphilis in the Islands was reduced fully two-thirds. About two years and a half ago the Minister of the Interior, a medical man, from purely personal motives suspended the action of the law, and since then, Dr. McKibbin assures me, syphilis has rapidly increased.

In Brussels the risk from syphilis from intercourse with public prostitutes has been reduced almost to a nullity, and in Paris, Berlin, and Vienna the diminution has been most marked. The great prevalence of syphilis in the French capital is due, in great degree, to the fact that there are upwards of 30,000 private prostitutes, many of whom are affected with the disease, and, as they are never inspected, are so many hot-beds for disseminating the poison; whereas the 6000 registered women, who are regularly inspected under government enactments, are comparatively clean and harmless.

Mons. Lancereux, with whose learned treatise on syphilis, published only a few years ago, every physician is familiar, in speaking of public hygiene in its relation to syphilis, says: "All other things being equal, syphilis rages with greater frequency in proportion as prostitution is less watched over;" that is, wherever there is unlicensed brothelism there is the greatest amount of syphilis, and conversely.

It has been alleged, as an objection to the licensing laws, that

compulsory examinations are demoralizing in their tendencies, and that they cause a feeling of self-abasement in the prostitute. But is this really so? Is it any more degrading for an impure than for a virtuous woman to be subjected to such treatment? Does not every educated physician at the present day use the speculum in the diagnosis and treatment of female diseases? Is not the prostitute examined with as much delicacy and gentleness as the most refined and elegant woman in Christendom? We have the authority of Mr. James R. Lane, Surgeon to St. Mary's and to the Lock Hospital, London, for stating that, as a rule, these women do not regard compulsory examinations with feelings of objection or dislike; but, on the contrary, that they are well contented with the system; and similar testimony is borne by Mr. W. H. Slogget, Inspector of Certified Hospitals in England, in a communication kindly sent to me in August, 1872.

The opponents of the licensing law assert that such a law could only proceed from a state of society essentially low, sensuous, and debased, utterly at variance with sound morals and the genius of Christianity. Such assertions are as untrue as they are absurd. Many of the wisest and best men, of all classes and stations in life, both in this country and in Europe, are the avowed advocates of the licensing law, and have employed their time and influence in securing its enactment and its rigid enforcement.

It has been alleged, as an objection to this law, mainly on the statement of Mons. Lecour, Chief of Police in Paris, where this system was originated, where it has been longest in vogue, and where it has been carried to the highest degree of perfection, that, instead of diminishing prostitution, it has served to increase it. However this may be, we have the testimony of numerous writers, professional and non-professional, for asserting that in nothing in France is the progress of science and of humanitarian principles more strongly exemplified than in the modern treatment of its prostitutes.

But I am not waging a war against prostitution. The object of the licensing law is not to prevent this evil, but to arrest the spread of syphilis, and, through the agency of good men and women, to reclaim the so-called "fallen sister." Prostitution, I repeat it, cannot be stamped out any more than drunkenness, political rascality, or any other deep-rooted national vice. They are part and parcel of the social evil; the heritage and shame of

a people, illustrating the imperfections of their nature, and of the laws by which they are governed.

What effect the establishment of anti-prostitution societies might have in arresting the "social evil," is only a matter of conjecture, as the experiment has never been tried. My impression is that it would, if properly conducted, be eminently salutary; but to render them at all effective, or what they should be, it would be necessary that the State should empower them with the right of prosecuting the offender, in the same manner as persons found guilty of cruelty to animals are now brought under the influence of the law.

How far moral and religious influences, if fully brought to bear upon the subject, might aid in promoting the reform of the "fallen sisterhood," is a question which has not been settled. A public meeting for this avowed object was held in February, 1860, at St. James's Hall, London, in behalf of this class of women inhabiting the purlieus of the Haymarket and Regent Street. It was headed by a number of benevolent and pious persons, and about 200 of these fallen women were present. Tea and coffee were liberally served. Eloquent appeals were made, and many of the poor creatures expressed not only a willingness but a great desire to forsake their evil and wretched life, and to return, through the gates of a reformatory, to respectability and usefulness. The actual success of this meeting, in its final results, has, I believe, never transpired; but it must be obvious that all such attempts to "snatch a brand from the fire" must prove abortive. Tea and coffee are good things in their way; a kind word, timely spoken, has its efficacy; a sermon upon morality has its benefits, but a loaf of bread, a good warm dress, a comfortable bed, and a sweet breath, have a greater potency, and do more towards reclaiming fallen women than all the efforts, the eloquence, and the persuasive power of the pulpit and the missionary. Let me not be misunderstood. Let the gospel by all means have its full sway; let God's minister do all the good he can, both publicly and privately; but let him not forget when he sets out upon his Christian errand with the Bible and the tract in one hand to have a big loaf in the other. While he prays for the "fallen sister," and invokes a blessing upon her head, let him not forget to appeal to the good, the wise, and the charitable to furnish her useful occupation for the support of her body and the comfort of her soul; otherwise all his efforts will be as mockery in the sight

of God, and a sham in the estimation of reflecting and sensible men.

The question arises here, Why, or How do women become prostitutes? What are the motives or incentives which induce them to enter upon a life of depravity and degradation, rendering them objects of scorn and contempt with their fellow creatures, outcasts of society, and unfit for that heritage which is allotted to God's people? The question is easily solved; indeed, the whole matter may be summed up in a few brief sentences: 1. Natural depravity, or want of innate moral principle, similar to that which makes a man a thief, a liar, or a drunkard; 2. Uncontrollable sexual passion, similar to that which makes men and boys onanists, and prompts them to resort to all kinds of expedients and crimes to gratify their appetites; 3. Cruel treatment of the parents, driving their daughters from their homes, and thus compelling them to seek asylums among strangers; 4. The wiles of the seducer, by which a girl, under promise of marriage, becomes pregnant, and is afterwards cast off by her family and friends; 5. Poverty, or the impossibility of gaining a livelihood by honest labor; 6. Fondness for dress or show, so common in the female in all ranks of life that it may be regarded as an inherent principle of her nature; 7. The influence of bad company, often aided by privation and a love of liquor, finery, or sexual enjoyment.

To these causes may be added, at least as being eminently true of our own country, our expensive modes of living, especially of female dressing, which prevent men from marrying women who would make excellent wives, but who, because of this circumstance, are reduced to poverty, for the relief of which refuge is sought in public and private prostitution.

These enactments should not be limited to the female sex; they should be made to apply equally to males. Sailors arriving in port, and soldiers stationed in barracks, should be compelled to undergo thorough inspection before they are permitted to resort to brothels or houses of ill-fame; and every infraction of the law should be visited with condign punishment.

Private citizens, high and low, rich and poor, afflicted with constitutional syphilis, should be restrained from marrying unless they first obtain a certificate showing that the specific virus has been sufficiently destroyed to render such an alliance safe and proper; or, in other and more intelligible language, free from

the danger of infecting their offspring. If feticide and infanticide are crimes, punishable by imprisonment and hanging, is the man who infects his offspring in its mother's womb, and that mother, perhaps, herself, free from guilt? or is he not as great a reprobate as the woman who deliberately kills her child after it is born? To insure an honest and punctilious compliance with such a requirement, our State legislatures should enact special laws, the non-observance of which should be punished by fine and imprisonment. Such laws, by operating upon the fears of the libertine and the innocent victim of sexual immorality, could not fail to be productive of beneficial results by diminishing, to a very great extent, abortions and miscarriages, and the premature destruction of children born at the full term.

We boast of the rapid increase of our population, and of the general diffusion of knowledge, but we seem to forget that the glory and prosperity of a nation consist not in the number, but in the character of its people. In proportion as a nation deteriorates in its physical and mental powers, are its degradation, and the danger of its ultimate downfall. When Rome was the mistress of the world, her men and women were noble specimens of humanity; and it was not until after the introduction of all kinds of luxury, immorality, debauchery, and crime, that her glory fairly began to decline, and eventually culminated in utter debasement and ruin. How far the syphilitic poison, combined with the degrading arts of the shopkeeper, affected the results of the late war of the French people with their German neighbors, would be an interesting question for the solution of the physiologist, the philosopher, and the statesman. "Of all the arts," as has been happily observed by an ingenious writer and thinker, "the grandest is the art of forming noble specimens of humanity." It is devoutly to be wished that all men infected with the seeds of the syphilitic virus, and of the so-called scrofulous maladies, especially pulmonary phthisis, should either altogether refrain from matrimony, or wed only strong and vigorous women. Pains should be taken to instruct young men in our colleges and seminaries of learning, in regard to the dangers of promiscuous sexual intercourse; and, indeed, it would be well if the same kind act were extended to all large bodies of men, wherever or for whatever purposes congregated. Nor should it be forgotten that private prostitution is often quite as dangerous as public.

In Brussels, according to Professor Crocq, the risks seem even to be greater, since, under governmental regulations, public prostitution has been reduced almost to a nullity. The subject is one of deep interest to life insurance companies, and to every charitable citizen disposed to spend his means in the promotion of the public weal. Many of the inmates of our deaf and blind asylums are the descendants of syphilitic parents, who thus manufacture diseases and infirmities to be treated at the expense of public and private charities. Our hospitals are filled with persons affected with maladies dependent, directly or indirectly, upon syphilitic infection.

In bringing this discussion, carried far beyond the limits originally assigned to it, to a close, I beg you to accept my cordial acknowledgments for your courtesy in so attentively listening to me, and to be assured that, in what I have said, I have had no wish or desire to indulge in perilous assertions, or to make positive statements without supporting them, at least in some degree, with proof, derived either from direct personal observation, or from a careful examination of the literature of the profession, illuminated by the labors of men, who, like myself, have eyes to see, and the light of experience to guide them. My sole aim has been to be truthful, and to interpret the facts presented here to-day, as I comprehend them, and as I discern their importance. The path is not a new one; other men have walked upon its slippery surface, and have shown the world that they were not afraid to encounter its perils. If, in what I have said, it has been my good fortune to awaken in your minds an earnest desire to prosecute the study of the question, and to aid me in directing to its importance the attention of the profession and of the people of the United States, so jealous of the national honor and glory, my highest ambition will be satisfied.

Prejudice is a powerful obstacle to success in any great, difficult, or novel enterprise; and it is only by associated effort, and by undaunted perseverance that anything within the limits of human reason and ingenuity is eventually brought to a triumphant issue. The age of miracles is passed. The sun no longer revolves round the earth; the belief in witchcraft has ceased to be a crime; a man's books are no longer burned by the hangman; the inquisition has been abolished; and, although the world is still infected with numerous superstitions and follies, many,

many things, considered at one time as impossible, are in successful operation, lightening the burdens of labor, extending the boundaries of civilization and Christianity, and bringing us daily into more close and intimate relations with the great Architect of the Universe.[1]

[1] I had hoped to be able to incorporate in this discourse some of the material which, through the kindness of Surgeon General Barnes, U.S.A., has been communicated to me by nearly thirty army surgeons stationed at our frontier settlements, concerning the prevalence of syphilis and scrofula among our principal Indian tribes; but the statements are so discordant as to render it difficult, if not impossible, to deduce from them any satisfactory conclusions. For this reason, they will be withheld until further light is thrown upon the inquiry. Meanwhile I herewith tender to the gentlemen who have been so kind as to respond to my wishes my cordial acknowledgments.

ENCHONDROMA OVER THE STERNUM.

By A. DUNLAP, M. D.,
OF SPRINGFIELD, OHIO.

In September, 1870, I was consulted by H. S., in regard to an enlargement over the sternum. Upon examination, I found an enchondroma pushing up from the junction of the middle and upper third of the sternum, involving the whole width of the bone, and extending upwards and downwards some three inches. The highest elevation of it was about an inch and a half. It was slightly nodulated and firm to the touch. He had first discovered it about fourteen years before, after an attack of fever. It, however, had only begun to grow for the last two years. His general health was good; it gave little or no pain; the glands were free from enlargement, and there was no disturbance in breathing, or in the action of the lungs or heart. I gave him my opinion that it was a benign enchondroma, pushing up the outer plate of the sternum, or, possibly, just under the periosteum; that for the present, on account of the danger of the operation and the uncertainty of the extent of the tumor internally, he had better let it alone; but that if it continued to enlarge and gave him trouble, an operation for its removal might be attempted.

I heard no more of the case until November, 1873, when I was called to see him. I found the tumor very much enlarged and nodulated, pushing out six inches or more from the sternum, the base nearly covering the whole front of the chest, the top of it elastic to the touch, the base very firm, large venous trunks running over it, the skin of natural color, no difficulty of breathing or disturbance of the pulse, and with no enlargement of the glands, but general health suffering materially. The tumor had several times been ulcerated from chafing, but had healed kindly. He had consulted Dr. W. H. Mussey, of Cincinnati, soon after seeing me first, who had given him about the same opinion

that I had on his first visit to me. He was now anxious to have the operation for its removal performed. I consented to do so. Disappointment in arranging his business matters delayed him until April 14th, 1874. I was then called to perform the operation. I found the tumor had been growing rapidly, had ulcerated, and a deep cavity had broken down in its centre. His health had been rapidly failing. No trouble, as yet, with breathing or pulse, nor enlargement of glands. I told him that on account of the broken-down condition of his health and ulceration of the tumor, the operation, I feared, would not be of any benefit to him. His reply was in the form of a question: "Doctor, do you think I will die in the operation?" I told him "No." He then said: "I want it done."

Still believing and hoping, from the great enlargement externally, and from the freeness of his respiration, that there was little if any internal enlargement, I consented to operate.

Assisted by my son, Dr. C. W. Dunlap, and Drs. Otwells, Matchet, and other physicians of Greenville, he was readily brought under the anæsthetic influence of alcohol, ether, and chloroform, which he bore well. I then made two incisions, commencing at the top of the sternum, running well up and around on either side of the tumor, and again uniting at the ensiform cartilage. After dissecting off the tissues down to the base, I ran the chain-saw through it close down to the bone, where the sternum should have been, thus removing the greater portion of the tumor, and giving me a chance to raise and dissect up the sides of the base that projected over the ribs. In doing this I met a muscular branch of the internal mammary artery of the right side, that was enlarged to near the size of the radial artery, and required a ligature; the only artery that required ligating in the operation. The sides of the base were removed by the saw. The bone gouge, forceps, and cutting pliers were then used in cutting away the base of the tumor in the sternum, as we supposed. Over the middle portion of the sternum I went through into a space that seemed to be the anterior mediastinum.

The upper portion of the tumor was left, to which the clavicles were joined.

After the bleeding was well stopped, the wound was closed by suture and isinglass plaster.

The operation lasted forty minutes, until placed in bed. He came quickly from under the anæsthetic with but little shock.

Very little blood was lost in the operation. Opiates and quiet for a few days, then tonics, was the only treatment. The wound healed by first intention to a great extent. The place I went through the sternum filled with granulation, and the skin healed over, but the portion of the tumor between the clavicles sloughed, disarticulating the clavicles from the sternum.

Under the care of Drs. Otwell and Matchet, the patient steadily improved, and in four weeks after the operation, when I saw him again, he was able to walk across the room, his greatest difficulty being his weakness in holding his head up, from the mobility of the clavicles. At this time the wound was all healed but a space about four inches long by one and a half wide, over the upper third of the sternum. The removal of the sequestrum of spongy bone left it nearly two inches deep.

I now became aware that the tumor had projected itself more internally than I had supposed; but had no idea that it was to the extent that it afterwards proved to be. The patient's appetite was good, he slept well, and was very hopeful, although I could give him no encouragement.

For two weeks longer he continued to improve in strength, but the wound deepened and spread by portions of necrosed, spongy bone coming away.

I here quote from a letter received from Dr. Matchet:—

"The patient seemed hopeful and cheerful, and was evidently gaining strength, for he would get up in his chair and sit and read the news of the day, until Monday night, May 18th, when he was taken with a severe pleuritic pain in the right side, which lasted the greater part of Tuesday and Tuesday night. On Wednesday he was entirely free from pain, but had a sense of suffocation. I noticed no respiratory movement of the right lung after Monday night, May 18th. Thursday we dressed his wound and changed his clothes, when he said he believed he was one hundred and fifty per cent. better than he had been. In dressing the wound I found a large sequestrum lying in the bottom of the cavity, a little to the left. It was quite loose and easily removed. It was about an inch square or cubital. When removed it left an opening, which I measured with my pocket-rule, two and one-half inches deep, below the sternum. I feared it had opened the left pleural cavity, which it eventually did, but not until Friday morning, when he was taken with severe pleural pain of the left side, extending from the sternum to the spine.

He had no cough. Died, 3 A. M., Saturday, May 19th. Saturday, 2 P. M., removed the specimen sent. Found the right lung so much impinged upon as to be absent in the upper lobe, and the lower lobe bathed in a mass of pus. The tumor filled the mediastinum, and lay directly upon the heart and aorta, a part of which was cut away and left adherent to the tumor. The weight of the tumor I send is five pounds full."

EPIPHYSEAL FRACTURE OF THE SUPERIOR EXTREMITY OF THE HUMERUS.

By E. M. MOORE, M.D.,
OF ROCHESTER, N. Y.

Professor R. W. Smith, in his admirable treatise on fractures in the neighborhood of joints, opens the subject of his paper with the following statement:—

"Fracture of the humerus through the line of its superior epiphysis is an accident, which not unfrequently occurs in early life. It is attended by a considerable degree of deformity, but of so striking a nature, that there is no great difficulty in recognizing the true nature of the injury.

"The axis of the arm is directed from above, within, and before, downwards, outwards, and backwards; the elbow, however, projects but little from the side, and can be brought into contact with it with facility; the head of the bone can be distinctly felt in the glenoid cavity; a slight depression is seen beneath it, and it remains motionless, when the shaft of the humerus is rotated.

"The most remarkable feature, however, of this injury, is a striking and abrupt projection, situated beneath the coracoid process, and caused by the upper extremity of the lower fragment, or the shaft of the bone, drawn inwards by the muscles, which constitute the folds of the axilla; there is but little displacement as regards the length of the bone, for the extremity of the inferior fragment is seldom drawn so far inwards as to enable it to clear completely the surface of the superior. Were this to occur, the humerus would, of course, be drawn upwards by the muscles passing from the shoulder to the arm, in a direction parallel, or nearly so, to the axis of the humerus, and a corresponding diminution in the length of the limb would result.

"This remarkable and abrupt projection does not present the sharp, irregular margin of an ordinary fracture; on the contrary, it feels rounded, and its superior surface is smooth and slightly

convex. The latter can be felt as plainly as the cup-like cavity of the head of the radius, in cases of luxation of that bone backwards, at the elbow-joint. By pressing the upper end of the lower fragment outwards, and directing the elbow inwards during extension and counter-extension, crepitus can be perceived, and the deformity removed without much difficulty; but the moment the parts are abandoned to the uncontrollable action of the muscles, the deformity recurs."

I quote this with reference to diagnosis, and a short summary at the latter part of his paper, as follows:—

"The chief diagnostic signs of the separation of the superior epiphysis of the humerus are, an abrupt projection beneath the coracoid process, caused by the upper end of the lower fragment, and the immediate recurrence of the deformity when the means employed for its reduction cease to be in operation."

Also, "There is no fracture incidental to the upper end of the humerus, in which it is more difficult to maintain the fragments in their proper relative position."

But notwithstanding the very positive statements with reference to the diagnosis, by the author as quoted, great confusion has existed, and still exists, as regards the exact nature of fracture of the humerus at the point under discussion. Nevertheless, after the very clear statement of symptoms that has been given by Sir A. Cooper, Prof. R. W. Smith, and Prof. Frank Hamilton, one would hardly suppose that error of diagnosis would occur. But it does occur and constantly. I think this results from the fact that a clear conception of the change of position has not been put forth, and more than this, and growing out of it, no method that secures reduction of the fracture has thus far, according to my knowledge, been proposed. If there had been a good method, especially if it were connected with its rationale, the experimentum crucis would have been present to clear up doubt of diagnosis as well as rectify deformity. We must, therefore, look to the configuration of the epiphyseal junction, to explain the positions of the bones, after the separation. Taking the head of a bone from a subject ten years of age parted by maceration, we find the angle made by the junction of the plane, projected through the anatomical neck (and which makes about two-fifths of the whole surface) with the plane, passing below the tuberosities, measures about one hundred degrees.

"The development of the humerus," says Gray, "is by one

ossific point for the shaft, one for the head, and one for the greater tuberosity. At birth, the shaft is ossified nearly in its whole length, the extremities remaining cartilaginous. Between the first and second years, the centre for the tuberosities makes its appearance, usually by a single ossific point, sometimes another for the lesser tuberosity, which does not appear until after the fourth year. By the fifth year, the centres for the head and tuberosities have enlarged and become joined, so as to form a single large epiphysis."

The constancy of the symptoms makes this fracture to differ from most that occur. The projection of the angle of the diaphysis, making the singular appearance about one or two inches below the acromion, according to the age of the patient, and the shortening of the humerus from half to three-fourths of an inch, will render the diagnosis so plain that the difficulty should not be mistaken for any other injury. But it is constantly mistaken, and the mistake is acted on; severe and protracted extensions being made to reduce relaxation.

A little irregularity is found on the surface, but the plane is pretty accurate. On the surface of the head is found a depression into which, if the shaft is moved inward about one-fourth of its breadth, there is a coaptation, which arrests the movement of the bones, and which also fixes the shaft at the point which Smith and other observers have described. The change of coaptation in the facettes explains the constancy of the symptoms, so regularly noticed, by which the projection forward of the diaphysis replaces the rotundity of the head. This change has a little analogy to dislocation of the knee laterally, by which the extreme condyle of the femur is jumped, as it were, into the cup on the internal condyle of the tibia, and retained by the tension of muscles. The posterior facette of the diaphysis, by the force of the blow and action of the muscles, becomes fitted to the anterior facette of the head. Of course, in such injuries as fractures, the muscles are apt to acquire their greatest tension at the moment of separation. Those that act in the direction of the shaft press upward. The head is set upon the shaft, at an angle, and if there were no other cause, they would have a tendency to roll the now movable head upon the glenoid surface. But besides the muscles, parallel with the shaft, there are those attached to the tubercles, whose traction would now roll the head so as to produce dislocation of the facettes. This position throws the

superior edge of the diaphysis forward, and then retains it there. For the universal testimony asserts the return to the same place, even after the strongest extension. It is the observation of all, that traction will cause the deformity to disappear. That traction does not produce reduction, is also equally evident, for the reason that it does not remain in place after it appears to be reduced. I think, however, that the relief of the deformity by traction is not as great as observers have thought. When extension is made, the head will undoubtedly work on the projecting angle of the diaphysis, and the tense deltoid, pressing the shaft back, would restore the rotundity of the shoulder. But the reduction of the luxated surface does not take place, and the cessation of the extension finds the capsular muscles ready to roll the head over and project the diaphysis forward. In consequence of the very common error of diagnosis, and the belief that a luxation is present, the attempt at reduction is made by extension. The evidence of the mistake in supposing that restoration had occurred after extension, is quite complete, for no one claims that the appearance of reduction is permanent, the symptoms recurring as soon as the extension ceases.

In view of such a displacement, the natural mode of reduction would seem to be one that would carry the diaphysis backward, and thus restore the corresponding facettes to their normal positions. This, I succeeded in doing, not by extension, but by carrying the humerus *forward* and *upward*. The head will roll upon the glenoid surface in any motion of the arm, until restrained by its capsule. While the humerus is still back of the central line of the body, the head is rolled upwards, and long before the humerus is brought up perpendicularly, the capsule at the lower border of the head has become tense, thus holding it firm while the humerus, being drawn up and restrained by its muscles, slides the diaphysis backward, producing a coaptation of the corresponding facettes. If these facettes have changed their position, or rather if one is entirely thrown forward, and the internal facette of the diaphysis is brought and retained in contact with the external one of the head, it must be obvious that when the shaft is hanging perpendicularly, the head must be rolled in such a position that the arm, if there were no fracture, would be nearly at right angles with the body. Of course the head will roll around in any direction, in consequence of the lock of the surfaces, unrestrained by any influence except the

EXPLANATION OF PLATE.

Figs. 1 and 2 represent the head and part of the shaft of the humerus, from a boy ten years of age, and are photographed life-size. These have been separated by maceration, and replaced.

Fig. 1 gives a profile of the bone regarded from its external aspect.

Fig. 2 gives a profile of the same bone regarded from its internal aspect.

The dotted line, A, indicates the anatomical neck.

The epiphyseal line, B, is seen to correspond with the anatomical neck along nearly one-half of its length, and diverges nearly at a right angle below the tuberosities.

Fig. 3 represents the same bone in the position it retains after fracture along the epiphyseal line. The smaller facette of the superior diaphyseal surface is locked with the larger facette of the corresponding surface of the head.

Fig. 1.

Fig. 2.

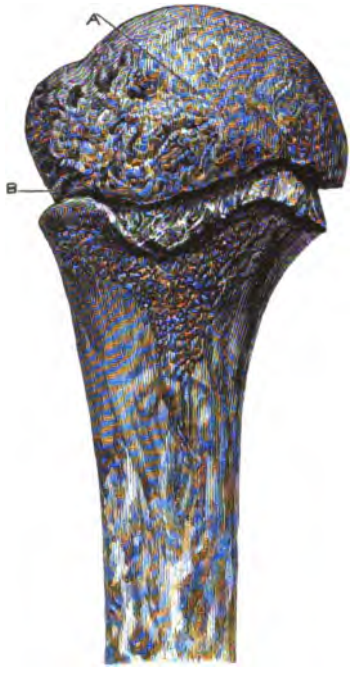


Fig. 3.

capsule. By a firm grasp of the thumb on one side, and the fingers on the other, the head may be so far restrained as to procure crepitus. But the hold is not secure enough to answer the necessities of reduction. But when the head is rolled over until the capsule becomes tense, the restraint will become perfect, if the force be applied in a direct line.

A very slight extension of the humerus will *now* preserve the relation of the two surfaces. While this moderate extension is maintained, the arm can be brought down to the side, all deformity having disappeared. In short, a reduction of the fracture has been accomplished.

From these statements, it becomes apparent, that this fracture possesses many of the characters of a luxation. The bones after separation are moved into and retained in a definite place in obedience to definite forces.

A fracture in other than an epiphyseal line is, as a matter of course, irregular at its surfaces; and while we may find that a general law may govern fractures at certain points, we also find frequent variations incidental to the form of the surfaces. No better illustration of this truth can be found than in the fractures immediately below, that is to say, at the surgical neck, for in these it is well known that the usual displacement is that of the shaft inward in obedience to the pectoralis major and latissimus dorsi. But even in this fracture, there are numerous cases, where the obliquity of the surfaces has caused a reversal of the usual relation.

The admission is made by all that no plan of treatment is likely to succeed; that the characteristic deformity appears upon the removal of dressings—but I have found no difficulty whatever in the use of Swinburne's extension plan. The axillary border has been sufficiently firm to bear the extension necessary, and the axillary band by passing over the head of the humerus assists in extension. I find no pressure sufficiently great to disturb the axillary nerves. Indeed, the method leaves nothing to be desired, and the facility with which it may be applied and worn renders it quite perfect. In every case it has entirely succeeded. But I think it can do this only when reduction has occurred.

It has been my fortune to see but a single case at its commencement, and that after severe and unsuccessful attempts at reduction. Two others having been unsuccessfully treated, or

not treated at all, were restored by me at periods of time varying from two to three weeks after the accident. It is well known that fractures separated after adhesions have formed, are not quite as easily retained as those which are recent. The swelling and the accommodation to new positions are circumstances that aggravate the difficulties. Yet in each of the three cases just mentioned there has been a perfect result. The restoration to full use was accomplished in less than thirty days—for the adhesive process is rapid, and, where we do not delay for osseous deposit, the use of the arm is soon possible.

The following cases confirm the correctness of the methods, as well as illustrate the rationale of displacement.

John Duff, æt. 14; September, 1868. Fell from a loaded wagon, striking on the right shoulder. He was seen two hours after the accident by a well-instructed physician, who committed the error of diagnosis formerly alluded to, in regarding the case as one of dislocation. Violent traction must have been made, for two men pulled at the arm; but when the extension ceased the deformity reappeared, although the supposed luxation was believed to have been reduced. This having failed, it was renewed the next morning, in consultation with another physician. The patient was then sent to me the same day. The characteristic symptoms were present as already detailed. It is also to be noted that on rotating the arm before reduction there was no crepitus until the head was grasped firmly. The bandage and splint were worn during the period of four weeks. The restoration was absolutely perfect, and so remains, as proved by a recent examination.

Nelly Coates, æt. 16. Fell from a height of about six feet, striking on the shoulder in front. The patient was seen immediately by the family physician, but he did not recognize any displacement. Fourteen days later she was seen by another physician of great experience, but, on examination, he also thought there was no displacement. The patient still suffering, a third physician was called, who thought there was luxation. I saw the case seventeen days after the accident. The symptoms, as detailed in the *résumé*, were all present. It was treated by first reducing the displacement, and the application of Swinburne's dressing, which was worn about two weeks. A year afterwards the arm was examined, and the result was so perfect that no difference in form or motion could be discovered.

Charles Bunnel, æt. 6 years; on March 15, 1873, fell, as it was thought, on his shoulder. He was seen by Dr. C. Hammond, of Monroe County, on the day following, who diagnosticated luxation, but, on making further examination while the patient was under the influence of ether, "found the movements of the shoulder perfect;" and getting no crepitus supposed the deformity resulted from ecchymosis. At the end of two weeks the swelling had subsided, and the prominence was more marked. At this time (March 18, 1873) I saw the patient for the first time. The boy was the unfortunate subject of infantile paralysis, which had occurred between the first and second year, and affecting the arm which was broken. My views had been pretty well settled before, but now I had a case, which, though not quite, was almost as capable of demonstrating the facts, as an autopsy. I need not remind the profession of the shrunk muscles and lax skin that invest the bone in such cases. As is usual, there was some muscular power; but while in the strong and healthy there is much diminution of utility in the arm, in this patient the little he possessed was gone, and hence its restoration became a matter of unusual interest. The adhesion of the bones was readily broken up by carrying the arm upwards. The muffled crepitus was obvious, and the restoration perfect. Three months afterwards, Dr. Hammond in a note to me remarks, that the "restoration is complete in every respect."

Résumé.—1st. The symptoms of this fracture are striking and uniform. The shaft of the humerus is so inclined as to carry the elbow a little backward and outward, while the superior end of the shaft is brought forward, so as to make a prominence less rounded than the head and lower down. This is usually found about an inch and a half below the acromion (the distance varying a little with the size of the youth) and near the coracoid process. The curved line from the acromion down to this projection has a long sweep, instead of the small sphere of the natural head. This appearance is pathognomonic, and may be safely trusted in diagnosis, without insisting upon crepitus. As in other epiphyseal fractures, this is not clear and sharp, as when the fracture is of bone, but is muffled. When the arm is moved gently, and without grasping the head, the peculiar lock of the surfaces is sufficient to cause the head to rotate, and thus the timid practitioner fails in getting his pathognomonic sign—but if the head be firmly grasped, it can not only be felt in the glenoid cavity, but be held

sufficiently firm to get this muffled crepitus by rotating the humerus, or by carrying the elbow inward and thus rubbing the two surfaces on each other. In addition to these striking symptoms we may add the fact of a shortening of half an inch or a little more in the length of the humerus. When the two shoulders are inspected from behind, the impression produced on the mind of the surgeon is that described as subluxation, for there is a slight flattening of the shoulder. The breadth of the shoulder is also increased when seen in profile. The motions of the arm are somewhat circumscribed. The ability to carry it upward and forward as well as upward and outward, is impossible much beyond a right angle with the body.

2d. The reduction of the fracture is effected by carrying the arm forward and upward to the perpendicular line.

3d. The retention is effected by moderate extension, while bringing the arm down to the side, maintaining this slight extension until dressings for the purpose of continuing it are applied. Swinburne's method fulfils the indication easily and perfectly.

4th. Even if not restored, the arm soon becomes useful, and nature gradually rounds off the prominence of the diaphysis, and elongates the capsules at the lower border, allowing the motions upwards to improve.

REPORT ON FRACTURES,

By LEWIS A. SAYRE, M.D.,

PROFESSOR OF ORTHOPEDIC SURGERY AND CLINICAL SURGERY BELLEVUE HOSPITAL MEDICAL COLLEGE, SURGEON TO BELLEVUE HOSPITAL, ETC. ETC. ETC.

THERE is such a difference of opinion in the profession in regard to the proper treatment of fractures, and also as to the prognosis in such accidents, that it seems to me a proper subject to bring before the Association for discussion, and see if, with the advantages we now have of anæsthetics, and also the numerous methods that have lately been adopted of retaining the bones in position, we cannot settle upon some fixed plan of treatment, that shall be of universal application, and that shall give better average results than heretofore we have been taught to consider as satisfactory.

When I was a student we were taught that as the bones did not commence to unite until after the ninth day, there was no absolute necessity to have them accurately adjusted until after this period. That all that was necessary during these nine days was to support the fractured limb on pillows in as good a position as was convenient, to make the patient in this way as comfortable as possible, and to combat inflammation with evaporating lotions, etc. etc., and to wait until the inflammation and swelling of the soft parts around the seat of fracture had subsided before we "set" the bone.

This was the universal practice at the New York Hospital at that time, and of all the physicians with whom I was acquainted. I am sorry to say that I have heard of two cases treated in this way in this city, within the past few months, and by gentlemen of position in the profession.

The first case of fracture that I saw after commencing practice early taught me the error of this doctrine, and I have never followed it since. I now always adjust a fracture as soon as I see it (if it is possible to do so), whether it be simple, compound, comminuted, or complicated, and then try to keep it in position, if

possible. Of course I do not include in this statement cases in which amputation is the only remedy.

As the result of my experience I would lay it down as a rule, that it is our duty to replace and accurately adjust all cases of fracture, which do not require amputation, *immediately* after the occurrence of the fracture, or as soon as we are called to see it, whether it be one hour or two days after the accident. If it is replaced *immediately* after the accident, the swelling of the soft parts will not take place to the same extent as when left distorted, and in many cases that I have seen, no swelling at all has occurred.

The bones are merely the framework to keep the body in shape and form. Each man's bones, whether tall or short, have muscles, bloodvessels, nerves, and connecting tissues perfectly to correspond, if he is not deformed. When the bone is fractured, the muscles traversing the fractured spot, by their contraction, produce shortening and distortion. By the contraction of the muscles the bloodvessels are necessarily looped in folds or zigzagged, thereby preventing free circulation through them.

Arteries having the *vis à tergo* from the heart's contraction, together with the contractility of their own muscular coat, may have power to force the blood through these obstructed channels to the portions of the limb beyond the fracture; but the veins, which are deprived of this propelling power, cannot return the blood through these angular distortions. Hence the œdema and effusion into the cellular tissue surrounding fractured bones that have not been immediately replaced in their normal position. Consequently the truth of my first remark, as to the necessity of immediate reduction of the fractures, must be apparent.

The evidences of fracture, as taught by all authorities, such as shortening, deformity, false point of motion, crepitus, etc., are so well established as to require no discussion.

The method of reduction and the time when it should be done, being moot questions, are deserving of consideration.

In fractures of the cranium, the plan of treatment is so well established as to require no additional amplification.

In fractures of the spine, reclining in a horizontal posture and a state of total rest, upon an air or water bed (air bed being preferable), with some fixed apparatus, such as plaster of Paris, dextrine, the silicates, celluloid, albumen and flour, etc., to prevent possibility of motion, is all that is requisite.

For fractures of the upper and lower jaw, the plan of treatment and mechanical contrivances employed by Dr. N. Kingsley, dental surgeon, preclude the necessity of further amplification.

In cases of fractured ribs, a broad band of adhesive plaster or bandage around the body, to hold the parts steady, is all that is necessary.

Fractures of the long bones require that *extension* and *counter-extension, under the influence of chloroform* or other anæsthetic, if necessary, should be made in a *proper direction*, until perfect accuracy of adjustment is obtained, and after this, *retention* and *fixation in this normal condition* until *consolidation.*

By *accuracy of adjustment* I mean the perfectly normal condition of the bone as to length and position. When the extension and counter-extension have been properly made, the muscles and other tissues surrounding the bones will necessarily and positively force the fractured extremities into their natural position, as above described, unless some foreign body, as a shred of muscle or connective tissue, has got between the fragments.

All extension beyond this point of perfect accuracy of adjustment is unnecessary and injurious; for, being abnormal, it excites reflex contractions. Hence the objection to continued extension which keeps up reflex irritation, or else by paralyzing the muscles allows of elongation, and consequently, frequently results in non-union.

All extension short of that necessary to this perfect adjustment is insufficient, leaving the extremities of the bone as sources of irritation, and causing pain and muscular contractions as well as leaving the vessels in a looped position, causing the œdema heretofore described. The nerves, also, being in an abnormal position, are additional sources of irritation.

When the bone (whatever bone it may be) is thus placed and retained in its normal position, the patient is free from pain, and all the functions of the limb are as well performed, in cases of simple fracture, and the recovery, in a healthy constitution, will be as perfect and complete, with normal length, without deformity, as if no fracture had occurred. If the limb has been extended to its normal length, the bones must necessarily be accurately adjusted by the surrounding tissues. If this position, therefore, be positively maintained, shortening cannot by any means take place, but rather a lengthening to the extent of the

plastic material effused between the bones that joins the fractured extremities.

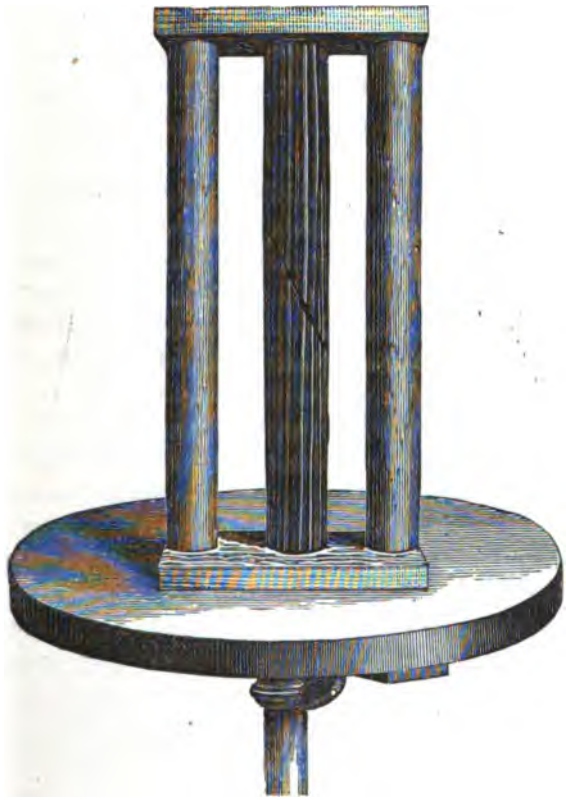
To illustrate the practical applications of the principle I am trying to inculcate, I have made this little model of three round sticks of exactly equal length. One of these sticks is nailed or screwed fast at each end, and to the middle of a small board four or six inches square, and is intended to represent the femur, or any other long bone. Small holes are then bored through these boards closely surrounding each end of the sticks, and as closely together as possible. Then thread a bodkin or eyed probe with some yards of elastic rubber or Indian-rubber tape to represent the muscles, and draw it through these holes in each board, closely surrounding the stick. Of course this is a very imperfect representation of the natural condition of a bone, and its surroundings, as in the normal state there is no vacant space whatever; but still it will answer practically to represent the muscles, and of course if the connective tissue could also be supplied, the illustration would be so much the better, and if the experiment answers in this rude model, it should, of course, act much more perfectly in the human subject.

Fig. 1.

This stick, which is to represent the bone, is now sawed in two pieces in the middle at a very oblique angle, to represent an oblique fracture. The rubber muscles will instantly contract,

protruding the sharp ends of the stick in different directions, and looping the vessels and nerves in a zigzag position, as seen in Fig. 1, from photograph of the model by Mason, of Bellevue Hospital.

Fig. 2.



Now by taking hold of the boards, and by pulling in the right direction until an assistant can place the two other sticks on either side of the sawed one, it will be found that the rubber muscles have accurately adjusted the sawed fragments, as seen in Fig. 2 (from photograph by Mason), and, if no further extension is made, will keep the fragments in accurate apposition so long as the side-sticks are retained in place. These two sticks having been sawed of exactly the same length as the one representing the fractured bone, will, when placed between the boards, stretch the Indian-rubber muscles to *exactly* the length of the sawed stick, *and no further*, and it will be found that the adjustment of the

fracture in the sticks is perfect and accurate, and all that is required is to keep them there, and the fractured stick will retain its position so long as they are not disturbed. If you continue to make extension beyond this point which is necessary for accuracy of adjustment, you will separate the fragments, and thus represent *the effects* of *continued extension* in the treatment of fractures.

The plan that has here been briefly sketched, I believe to be of universal application, and the surgeon who can the most accurately put it into actual practice will have the best results in the treatment of fractures. In a report of this nature, which is simply intended to bring up the subject for discussion, it would be altogether out of place to go into the details of the treatment of fractures of each different bone, as it would make a paper altogether too voluminous for publication in the Transactions of the Association. But I will simply supplement it by a table of the fractures treated in Bellevue Hospital in the year 1873, which has been compiled from the hospital records by Dr. Van Wagenen, late house surgeon to Bellevue Hospital.

It will be particularly observed in studying these tables that the three cases of greatest shortening, in which the permanent dressing of plaster of Paris was applied, were the three cases that were necessarily confined to their bed on account of other complications, showing that if this dressing is the one preferred by the surgeon, it is better to keep his patient up and walking about occasionally, as the limb will then fill with blood and retain its accuracy of fit to the plaster casing, whereas the horizontal posture allows of more shrinkage, and the extension not being accurately retained necessitates the more frequent change of the dressings.

A RECORD OF FRACTURES TREATED AT BELLEVUE HOSPITAL WITH PLASTER PARIS APPARATUS,

From April 1, 1872, *to April* 1, 1873,

INCLUDING ONLY THOSE CASES OF WHICH A THOROUGH RECORD COULD BE FOUND

TABULATED BY

GEO. A. VAN WAGENEN, M.D.,

House-Surgeon, Bellevue Hospital, October, 1872—April, 1873.

The record of fracture of femur is full, including almost all the cases treated, while the record of results in less important cases (as fractures of the leg) has been neglected in many instances. Many were simply marked "*cured*," with no statement as to time, number of splints, and condition of the limb after treatment, etc. *These were all* REJECTED in the inclosed tables.

G. A. V. W.

SIMPLE FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
Ed. Gurner.....	M.	3½	June 20	Femur	Junction mid. & lower third	Transverse, short 1 inch	Fall down stairs
Robert Tracy.....	M.	7	Nov. 2	"	Just below trach. major	¾ inch short	Fall against curb
N. Brown.....	M.	9	Feb. 10	"	Junction up. & mid. third	1½ inch short	Struck by car
T. McC.	M.	10	Aug. 31	"	Junction up. & mid. third	1¾ inch short	Fall of three stories
Fr. McCabe.....	M.	15	Nov. 17	"	Middle third	1¾ inch short	Pile of lumber fell on him
Mary Keenan.....	F	16	Jan. 11	"	2 inches above knee	Crepitus and false motion; no deformity; no shorten'ng	Fall 10 feet
M. O'Hara.....	M.	19	Mar. 29	"	Middle third	1¼ inch short	Fell 3 stories
H. L.....	M.	23	Aug. 10	"	Middle shaft	.....	.....
M. Delaney.....	M.	26	Feb. 17	"	Middle shaft	.....	Fall 30 feet
Thos. Sullivan	M.	26	Mar. 15	"	Lower third	1½ inch short	.....
J. McIlvain.....	M.	26	June 16	"	Middle shaft	.....	Fall 30 feet
M. Stewart.....	F.	29	June 21	"	Middle third	.....	Fall 4 stories
S. Knapp.....	M.	35	Oct. 11	"	Just below troch. major	Great swell'g, ⅞ inch short	Fall 6 feet
Pat. Mergan	M.	37	Feb. 18	"	Middle shaft	⅞ inch short	Fall 20 feet
Fred. Norman.....	M.	43	June 3	"	Junction middle and lower third	2 inches short, and lateral deformity.	Fall 10 feet
J. McCann	M.	43	March 30	"	3 inches above condyles	1 inch short, great swelling	Kick of horse
Jos. Shannon.....	M.	45	Dec. 17	"	Middle third	1 inch short	Fall on ground
J. Williamson.....	M.	45	June 26	"	Junction mid. & upper third	.....	Run over by truck
J. W	M.	44	Aug. 28	"	Upper third	.....	.....
Jas. Hall.....	M.	46	Aug. 10	"	Junction mid. & lower third	2 inches short	Case of goods fell on him
Jas. McGovern....	M.	54	Aug. 24	"	Middle third	1¼ inch short	Run over by wagon
R. Yohr.....	M.	56	March 3	"	Upper third	½ inch short, lat. deformity	Fall down stairs
Ann Karty.....	F.	60	Dec. 23	"	Intracapsul.	1 inch short	Fall on ground
P. D.....	M.	60	Dec. 6	"	Neck, extra-capsul.	1¼ inch short	Struck by wagon

OF OS FEMORIS.

Splints. Applied. 1st.	Applied. 2d.	Applied. 3d.	Removed. 1st.	Removed. 2d.	Removed. 3d.	Number of splints.	Result.	Anæsthetic.	Remarks.
June 23 3d day	.....	.....	July 22 29 days	.....	.....	1	¼ in. short	None	
Nov. 7 5th day	.....	.....	Dec. 14 35 days	.....	.....	1	No shortening	Ether	
Feb. 25 15th d'y	.....	.....	Mar. 23 28 days	.....	.....	1	¾ in. short; firm union	None	Buck's extension was used until Feb. 25 (first 15 days).
Sept. 1 2d day	.....	.....	Oct. 10 40 days	.....	.....	1	¾ inch short	Ether	
Nov. 19 2d day	.....	.....	Jan. 7 48 days	.....	.....	1	⅛ inch short	Ether	
Jan. 25 14th d'y	Feb. 17	.....	Feb. 17 22 days	Mar. 10 23 days	.....	2	No shortening; good union, etc.	None	
April 4 5th day	.....	.....	May 12 38 days	.....	.....	1	¾ in. shortening; good union, etc.	None	
Aug. 12 2d day	.....	.....	Sept. 26 44 days	.....	.....	1	No shortening	Ether	
Feb. 21 4th day	Mar. 5	.....	March 5 12 days	April 2 27 days	.....	2	1¼ inch short; slight bowing outward	Ether both times	Buck's extension for first 3 days. This patient had pneumonia, and remained in bed all the time during treatment.
April 2 13th d'y	.....	.....	May 14 42 days	.....	.....	1	¾ inch shortening; union firm	None	Buck's extension had been used for 18 days; shortening still 1½ in. This was reduced by pulleys to ¾ inch, and plaster applied.
June 23 7th day	.....	.....	Aug. 5 42 days	.....	.....	1	½ in. shortening	None	This patient also had dislocation of opposite femur into sciatic notch, delaying the application of plaster to fractured limb.
June 24 3d day	.....	.....	July 19 25 days	.....	.....	1	⅛ in. shortening	Ether	Removed early on account of a bed-sore (25th day).
Oct. 23 11th d'y	.....	.....	Dec. 4 41 days	.....	.....	1	⅛ in. shortening		Buck's extension for 11 days until swelling subsided.
Feb. 20 2d day	.....	.....	April 4 44 days	.....	.....	1	¼ in. shortening; union and position good		
June 4 n'xt d'y	.....	.....	July 13 39 days	.....	.....	1	½ in. shortening		
Mar. 30 1 h. aft'r injury	.....	.....	May 13 43 days	.....	.....	1	⅛ in. short'ning; position and union perfect	Ether	
Dec. 20 3d day	.....	.....	Jan. 31 41 days	.....	.....	1	1⅛ inch shortening	.....	Delirium tremens came on Dec. 18, before the splint was applied.
July 1 5th day	July 17	.....	July 17 16 days	No record — days	.....	2	Ununited	Ether both times	A leather splint was arranged for him, and he was able to *walk* aided by a crutch. The first splint was loose when removed.
Aug. 30 2d day	.....	.....	Sept. 8 9 days	.....	.....	1	¾ in. shortening	Ether	The splint excoriated perineum and was removed, Buck's extension being applied.
Aug. 14 4th day	Aug. 17	.....	Aug. 17 3 days	Oct. 1 43 days	.....	2	⅛ in. shortening	Ether	
Aug. 24 same day	.....	.....	Oct. 7 43 days	.....	.....	1	⅛ in short'ning; slight stiffness at knee	Ether	
May 8 5th day	.....	.....	June 3 25 days	.....	.....	1	2 inches shortening	Ether	Patient had subacute pleurisy, and was kept in bed during treatment. He lost flesh, and the splint became very loose.
Feb. 11 47th d'y	.....	.....	Feb. 28 17 days	.....	.....	1	1 in. sht. (same) but she now walks	.....	This was applied simply to allow her to go about with a crutch.
Dec. 10 4th day	.....	.....	Feb. 1 50 days	.....	.....	1	¼ in. short'ning; union and position right	None Pat'nt had card'c	

SIMPLE FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
P. K.	M.	65	Nov. 6	Femur	Neck, extra-capsul.	.....	.....
Wm. Flood	M.	65	Dec. 2	"	Intracapsul.	¾ inch short	Fall on ground
Tim. Flynn	M.	74	Sept. 28	"	Through troch. major	2 inches short	Fall 20 feet

COMPOUND FRACTURES

Charles Reginstein	M.	8	Sept. 19	Femur, comp'd	Upper third	.....	Run over by truck

COMPLICATED FRACTURES

Herbert Putnam...	M.	19	July 4	Femur, Tibia, comp. com.	Lower part of middle third	.....	Crushed between 2 railroad cars in a railroad accident
Charles Burns.....	M.	33	July 23	Femur, Tibia and Fibula, simp.	Middle Middle	.....	Run over by truck
Alice Delaney.....	F.	17	June 15	Femur, Humerus, simple	Lower third Middle third	.....	Struck by rocks from a blast
S. U. Clerk.....	M.	18	Jan. 21	Femur, Humerus, simple	Oblique just about middle, just above condyles	Oblique, 1 inch short 1 inch short, oblique	Fall 30 feet

RESULTS.

Lengthening of ¼ inch.	No. 1.	
No shortening	" 4.	
Shortening of ⅛ inch.	" 4.	
Shortening of ¼ inch.	" 5.	
Shortening of ⅓ inch.	" 7.	
Shortening of ⅗ inch.	" 1.	
Shortening of ¾ inch.	" 5.	See cases for reasons for this poor result.
Shortening of 1 inch.	" 1.	Treatment began late; no attempt to get full length.
Shortening of 1⅛ inch.	" 1.	Patient had a bad attack of delirium tremens.
Shortening of 1½ inch.	" 1.	Patient had a bad pneumonia; in bed all the time (the *worst possible* position in plaster thigh dressings).
Shortening of 2 inches.	" 1.	Kept in bed by subacute pleurisy.
Ununited.	" 1.	

OF OS FEMORIS.—Continued.

Splints. Applied. 1st.	2d.	3d.	Removed. 1st.	2d.	3d.	Number of splints.	Result.	Anæsthetic.	Remarks.
Nov. 12 6th day	.....	.....	Jan. 12 69 days	.....	.....	1	½ in. shortening	None	
Dec 4 2d day	.....	.....	Dec. 19 15 days	.....	.....	1	½ in. shortening	Ether	
Oct 8 10th d'y	.....	.....	Nov. 16 38 days	.....	.....	1	¼ in. short'ning; union, etc., perfect	.....	Patient had pneumonia after plaster was applied, and was kept in bed 12 days.

OF OS FEMORIS.

Sept. 18 9th day	.....	.....	Oct. 16 28 days	.....	.....	1	¼ in. short'ning; union and position perfect	None	The wound was sealed with collodion on muslin, and patient kept in bed with Buck's extension and coaptation splints on. Plaster not applied immediately for fear of doing injury to the limb in the struggle he would probably make.

OF OS FEMORIS.

July 4 5½ hours after injury	July 17	.....	July 17 13 days	Aug. 21 34 days	.....	2 1 leg	⅛ in. lengthening	Ether both times	A splint was first put on the fractured leg, from this extension was made to bring down the femur. Next day leg splint was cut off to the knee and a new one put on to be sure that extension had done no harm to leg.
July 24 P. M. n'xt d'y July 24 A. M.	..... July 25	Sept. 4 (4th) Oct. 3	Sept. 4 July 25	..... Sept. 4	Oct. 3 (4th) no record	1 4 leg	No shortening; absolute	Ether	The splints were arranged for extension as in the case above.
June 17 2d day June 18 3d day	July 7	.....	July 7 20 days July 15 28 days	July 25	.....	2 1 arm	⅛ in. short'ning; position and union perfect	Ether both times	
Jan. 24 3d day Jan. 24 3d day	Feb. 5	.....	Jan. 28 4 days Mar. 11 47 days	Feb. 27 22 days	.....	2 1	⅝ in. short.; position, etc., perfect	Ether	

RESULTS.

Lengthening	is 1, or $\frac{1}{30}$	about of all cases.	
No shortening	are 5, or $\frac{1}{6}$	about of all cases.	
Shortening of ⅛ inch and less	are 9, or ⅓	" " "	or $\frac{9}{31}$.
Shortening of ¼ inch and less	are 14, or ½	" " "	or $\frac{14}{31}$.
Shortening of ½ inch and less	are 21, or ⅔	" " "	or $\frac{21}{31}$.
Shortening of 1 inch and less	are 27 or $\frac{9}{10}$	" " "	
Shortening of over 1 inch	are 3 or $\frac{1}{10}$	" " "	See cases for reasons.

SIMPLE FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
Nora Rowan.....	F.	19	July 8	Patella	.....	¾ inch separation	Fall
Nora Rowan..... (Refracture)	F.	19	Sept. 22	"	.....	Considerable separation	Fall
D. Garry.....	M.	24	Jan. 26	"	Transverse	Widely separated	Muscular contraction in attempting to catch himself
Fred. Behring.....	M.	30	Feb. 8	"	"	¾ inch separation	Muscular traction in attempting to catch himself
Anton. Joseph	M.	35	Dec. 24	"	"	1 inch separation	.....
David Lynch	M.	36	Dec. 19	"	"	¾ inch separation	Fall

COMPOUND FRACTURES

Charles Kiesling ..	M.	55	Feb. 17	Patella, comp. com.	Comminuted	1 inch separation; great swelling	Fell striking patella on a stone step

SIMPLE FRACTURES

T. D.....	M.	18	Nov. 3	Tibia	Middle	.....	.....
Johanna Ward	F.	20	Jan. 26	"	2 in. above malleolus	.....	Slipped on the ground
Min. Haddon.....	F.	27	Feb. 10	"	2 in. above malleolus	.....	Slipped on ground
John Guyton	M.	29	Mar. 22	"	6 in. below patella	Oblique	Crushed by case of goods 900 lbs.
John Burke.....	M.	29	Mar. 23	"	Middle	Oblique	Slipped on ground
Catharine Corlan..	F.	30	Feb. 12	"	5 in. above malleolus	.....	Slipped on ground
Th. Dempsey.....	M.	35	June 2	"	4 in. above malleolus	Oblique; some shortening; considerable swelling	Fall 5 feet
Agn. Jarvis.....	F.	42	Dec. 31	"	Junc. middle & lower third	None	Fall on ice
M. K.....	F.	50	May 24	"	3 in. below patella	.....	.....
P. M.....	M.	54	May 28	"	5 in. below patella	.....	.....

OF PATELLA.

Splints. Applied. 1st.	2d.	3d.	Removed. 1st.	2d.	3d.	No. splints.	Result.	Anæsthetic.	Remarks.
July 12 4th day	.....	.....	Aug. 26 44 days	.....	.....	1	¼ inch separation; union good	.....	Adhesive plaster strips were used for first 4 days, but they did not answer at all.
Oct. 1 8th day	.....	.....	Jan. 1 90 days	.....	.....	1	Moderate motion (separation not recorded)		
Jan. 26 same day	Feb. 6 (starch) 10th d'y	Feb. 13 17th d'y No. 4, Feb. 25 29th d'y No. 5, Mar. 10 44th d'y	Sept. 6 10 days	Feb. 13 7 days	Feb. 36 12 days No. 4, Mar. 10 15 days No. 5, May 3 53 days	5	¼ inch separation; firm ligamentous union	.....	The apposition of the fragments was found to be perfect every time the splints were removed, except the last.
Feb. 13 4th day	Feb. 25 17th d'y	.....	Feb. 25 17 days	Feb. 26 1 day	.....	2	⅛ inch separation; knee rather stiff	.....	It is not stated why last splint was removed so soon.
Dec. 27 3d day	Jan. 7 13th d'y	.....	Jan. 5 8 days	Feb. 10 35 days	.....	2	¼ inch separation; good union		
Dec. 22 3d day	.....	.....	Feb. 4 40 days	.....	.....	1	⅜ inch separation		

OF PATELLA.

Feb. 25 8th day	.....	.....	Feb. 31 6 days	.....	.....	1	No separation; good union and motion	.....	Application of the splint was delayed by swelling.

OF TIBIA.

.....	Jan. 15	.....	Jan. 15	Feb. 1 15 days	.....	2	Perfect		
Jan. 26 immed.	Feb. 22 26th d'y	.....	Feb. 9 cut up. Feb. 22 rem'v'd	Mar. 5 11 days	.....	2	Perfect		
Feb. 11 n'xt d'y	.....	.....	Mar. 23 42 days	.....	.....	1	Right		
Mar. 23 n'xt d'y	April 26 33d day	April 28 (silicate soda) 35th d'y No. 4, May 28 65th d'y	April 26 33 days	April 28 (did not fit) 2 days	May 24 26 days	4	Union not firm	.....	The patient was discharged with the 4th splint on. Silicate soda was used in 3d splint, as plaster was uncomfortable.
Mar. 26 (silicate soda) 3d day	April 2 10th d'y	.....	Mar. 29 cut, it is tight. April 2 10 days rem'v'd	April 25 23 days	.....	2	Union and position good. Some temporary paralysis of extensors of foot		
Feb. 13 n'xt d'y	April 1 48th d'y	.....	April 1 48 days	April 4 3 days	.....	2	Good union		
June 4 2d day	.....	.....	July 11 37 days	.....	.....	1	Union and position good		
Jan. 1 n'xt d'y	Feb. 15 45th d'y	.....	Feb. 15 45 days	Mar. 24 39 days	.....	2	Union and position good		
June 20 28th d'y	.....	.....	July 20 30 days	.....	.....	1	Fibrous union; position good	.....	This patient came into hospital several weeks after injury. The splint was put on to enable her to go about ward.
May 28 immed.	.....	.....	No record	.....	.....	1	Perfect		

SIMPLE FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
John Flemming...	M.	75	Jan. 29	Tibia	Junction of middle and upper third	Bows out	Horse stepped on his leg
J. I.....	M.	No record	Nov. 4	Tibia double frac.	1.3 in. below patella 2.7 in. below patella	.....	Fall

COMPOUND FRACTURES

Herbert Putnam (see Fr. of Femur.)	M.	19	July 4	Tibia comp. commin. Femur simple	Lower and middle third; Lower part middle third	.....	Railroad accident
J. H.....	M.	22	Aug. 27	Tibia comp.	Middle third	Very oblique	.....
M. K.....	F.	34	May 11	Tibia comp	2 inches above malleolus	.....	.....

SIMPLE FRACTURES

J. Collins.....	M.	25	Mar. 30	Fibula and inter. lat. lig.	Potts' fracture	Potts'	Slipped on ground
P. McN.....	M.	26	Dec. 23	"	" "	"	.....
B. Scanlon.....	F.	36	Oct. 21	"	" "	"	Fall
J. B.....	M.	45	May 1	"	" "	"	.....
S. Cullan.....	F.	65	Feb. 4	"	" "	"	Fall on ice
G. H.....	M.	50	Oct. 31	"	" "	"	Fall

COMPOUND FRACTURES

Rosanna Carney...	F.	32	Nov. 23	Fibula comp'd	Potts' fracture	Potts'	Fall down stairs
B. G.....	F.	55	May 15	Fibula comp'd	" "	"	.....

SIMPLE FRACTURES

Charles Holroper..	M.	30	Nov. 24	Fibula	3 inches above malleolus	.....	Fall
Pat. McDonald....	M.	35	Feb. 21	"	2½ in. above malleolus	.....	.....
A. K.....	F.	..	Sept. 25	"	External malleolus	.....	.....

SIMPLE FRACTURES

Jos. Wener.....	M.	16	Oct. 21	Tibia and fibula	Junction mid. and lower third	Transverse fracture	Fall 10 feet
E. D.....	M.	25	Feb. 16	"	Lower third	.....	.....

OF TIBIA.—Continued.

Splints. Applied. 1st.	Applied. 2d.	Applied. 3d.	Removed. 1st.	Removed. 2d.	Removed. 3d.	No. splints.	Result.	Anæsthetic.	Remarks.
Feb. 7 8th day	Feb. 14 15th d'y	Mar. 24 55th d'y	Feb. 14 7 days	Mar. 13 29 days	Mar. 29 5 days	3	Position good; union not very firm	.....	It is not recorded what was used between March 13, and March 24, when patient seems to have been without splints.
Nov. 12 8th day	.....	.....	Dec. 17 35 days	.....	.....	1	Union and position perfect		

OF TIBIA.

July 4 in 5½ h. July 5 n'xt d'y	July 6 2d day July last	July 17 13th d'y	July 6 2 days July last past	July 17 11 days Aug. 21	Aug. 21 34 days	3 2	⅛ inch longer; union & position perfect	Ether twice	This patient walked from the battery to Cent'l Park in latter part of September. He was of good family, healthy, and plucky.
Sept. 2 5th day	Sept. 15 18th d'y	Sept. 18 21st d'y	Sept. 15 13 days	Sept. 18 3 days	No record	3	Union & position perfect; joint a little stiff	None	The splints were changed as they became soaked with the discharges.
May 11 immed.	.....	.....	No record	.....	.....	1	Perfect		

(POTTS') AND OF FIBULA.

April 1 n'xt d'y	.....	.....	May 9 39 days	.....	.....	1	Union & position perfect	None	
No record	.....	.....	Jan. 22 29 days	.....	.....	1	Perfect	None	
Oct. 28 7th day	.....	.....	Patient ran away on pass	.....	.....	1	.. ..	.....	This patient ran away with the splints on.
May 1 immed.	.....	.....	No record	.....	.....	1	All right		
Feb. 5 n'xt d'y	.....	.....	Mar. 26 21 days	.....	.....	1	Cured		
Nov. 9 9th day	.....	.....	Dec. 14 35 days	.....	.....	1	Union & position perfect		

(POTTS').

Dec. 7 14th d'y	Dec. 14 21st day	Jan. 3 39th d'y	Dec. 14 7 days.	Jan. 3 19 days	Feb. 8 35 days	3	Union & position good	.....	Patient did not come to hospital until two weeks after accident.
May 15 immed.	June 1 15th d'y	.....	June 1 15 days	June 30 15 days	.....	2	Perfect	Ether	

OF FIBULA.

Nov. 26 2d day	Dec. 9 13th d'y	.....	Dec. 9 13 days	Jan. 6 27 days	.....	2	Firm union		
Feb. 25 4th day	.....	.....	May 31 36 days	.....	.....	1	Perfect		
.....	.....	.....	Nov. 5 40 days	.....	.....	1	Good		

OF BOTH TIBIA AND FIBULA.

Oct. 29 8th day	.....	.....	Nov. 30 31 days	.....	.....	1	Cured		
Feb. 18 2d day	Mar. 5 17th d'y	.....	Mar. 5 16 days	Mar. 24 19 days	.....	2	Union and position perfect		

SIMPLE FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
Wm. Coogan.....	M.	26	Mar. 26	Tibia and fibula	Near middle	Oblique	Jumping from a wagon he fell
Geo'a Hays.....	F.	28	Feb. 21	" "	Near middle	.....	Slipped on ground
F. McNamara.....	F.	29	Jan. 13	" "	3½ in. above malleolus	Swollen	Slipped and fell on ice
Peter Dempsey....	M.	30	June 8	" "	Upper third	Swollen	Struck by a "jack" which slipped in raising a ship
W. S.....	M.	30	Nov. 19	" "	Middle third	.....	.....
J. Mahoney.....	M.	30	Feb. 22	" "	.....	Oblique	Slipped on ground
N. T.....	M.	38	Dec. 8	" "	.....	.....	Fall
W. S.....	M.	40	Nov. 14	" "	Junct'n lower and middle third	.....	.....
J. H.....	....	42	April 27	" "	.....	.....	Direct violence
J. O'Brien	M.	42	June 15	" "	.....	.....	.....
Jas. Crogan.....	M.	45	Aug. 31	" "	Junct'n lower and middle third	Badly swollen	Fall 10 feet
J. Thompson.....	M.	45	Feb. 19	" "	.....	Oblique	Slipped on ground
A. G.....	F	50	June 4	" "	2 in. above malleolus; ½ in. above malleolus	Great deformity	.....
C. F.....	F.	55	Nov. 28	" "	.....	.....	.....

COMPLICATED FRACTURES (not compound)

Joseph Keller.....	M.	21	April 2	Triple frac. tibia and fibula	1. Near malleoli 2. Middle shaft 3. Upper third	Short 1½ inch	.....
Henry Shiner	M.	23	Feb. 27	Double com. fracture, tibia comm. fibula comm.	3 & 8 in. above malleolus 3 & 8 in. above malleolus	Swollen and inverted	Slipped on ground
P. K.....	M.	24	Dec. 30	Comm. of fibula, tibia and fibula com.	.....	.....	.....

OF BOTH TIBIA AND FIBULA.—Continued.

Splints. Applied. 1st.	2d.	3d.	Removed. 1st.	2d.	3d.	No. splints.	Result.	Anæsthetic.	Remarks.
Mar. 26 at once	April 3 silic. soda 7th day	.....	Mar. 29 3 days, tight	May 6 37 days	.....	2	Union good, but slight deformity	.....	Pain ceased when the plaster splint was cut. This case was treated with silicate soda, the splint being braced ant. and post. with iron strips.
Feb. 22 n'xt d'y	.....	.....	April 5 33 days	.....	.....	1	Cured		
Jan. 14 n'xt d'y	Jan. 21 8th day	.....	Jan. 21 7 days, loose	Feb. 26 36 days	.....	2	Union and position perfect		
June 12 4th day	July 13 35th d'y	.....	July 13 31 days	No record	.....	2	Union and position perfect		
Nov. 20 n'xt d'y	Dec. 4 15th d'y	Jan. 3 44th d'y	Dec. 4 14 days, loose	Jan. 3 29 days union not firm	Jan. 20 17 days	3	Union and position perfect	Ether 1st time	The patient is suffering from tertiary syphilis.
Feb. 22 immed'y	.....	.....	April 14 50 days	.....	.....	1	No record		
Dec. 8 same day	.....	.....	Jan. 10 32 days	.....	.....	1	Union and position perfect	.....	Dec. 9, in delirium tremens patient walked about the ward on his splint until secured; neither the leg nor splint were injured.
Nov. 14 same day	Dec. 27 43d day	.....	Dec. 27 43 days, union not firm	Jan. 31 34 days	.....	2	Union and position perfect	Ether to reduce fract. 1st time.	
Immediately	.....	.....	No record	.....	.....	1	Union and position perfect		
June 15 same day	June 24 9th day, to see that all is right	.....	June 24 9 days	No record	.....	2	Union and position perfect		
Sept. 4 (starch) 4th day	Oct. 8 38th d'y	.....	Oct. 8 34 days	No record	.....	starch plas 1	Some deformity after the starch; no record of plaster		
Immediately	.....	.....	No record	.....	.....	1	⅝ inch shortening		
Immediately	.....	.....	July 8 34 days	.....	.....	1	Some deformity	Ether	
Nov. 28, same day	.....	.....	Jan. 15 47 days	.....	.....	1	Union and position perfect		

OF BOTH TIBIA AND FIBULA.

Immediately	April 8 6th day	.....	Cut down to relieve swel'ng of foot April 2, remov'd April 8, 6 days	May 13 35 days	.....	2	Union, length, and position perfect	Ether 2d splint	When the first splint was removed there was 1 inch shortening. Ether and the comp'd pulleys were used, the reduction made perfect, and 2d splint applied.
Mar. 1 2d day	Mar. 11 12th d'y	.....	Mar. 11 9 days loose	April 4 23 days	.....	2	Union and position perfect		
Jan. 4 4th day	.....	.....	Feb. 20 46 days	.....	.....	1	Union and position perfect	Ether	

COMPLICATED FRACTURES (not compound)

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
Charles Burns.....	M.	33	July 23	Tibia and fibula, femur	Middle Middle	.....	Run over by truck
John Van Thung...	M.	41	Nov. 2	Tibia com. fibula com.	.....	.....	A barrel of beer fell on the leg

COMPOUND FRACTURES

Benj. McMahon....	M.	8	Feb. 17	Both tibia comp. com. both fibula comp. com.	Junct'n lower and mid. third	.....	Run over by horse car
R. Jackson.....	M.	23	June 10	Tibia comp. and fibula comp.	Junct'n lower and mid. third	.....	Direct violence
P. Beck.....	M.	23	Oct. 28	Tibia and fibula comp.	Junct'n lower and mid. third	.....	A 1575 lb. roller passed over the limb
John Manning.....	M.	26	Sept. 10	Tibia comp. and fibula comp.	Middle	.....	Run over by horse car
W. E.....	M.	28	April 25	Tibia and fibula comp.	2 inches above malleolus	.....	.....
P. Stoll.....	M.	36	Sept. 23	Tibia and fibula comp.	Middle third	1 inch of bone removed; no swelling	Fall 20 feet
Ch. Keeney.....	M.	42	Mar. 20	Tibia and fibula comp.	Junct'n upper and mid. third	Lower fragment projects	.....

SIMPLE FRACTURES

Henry Coleman...	M.	12	Sept. 15	Humerus	.....	.....	Fell 6 stories
Ernest Klinck.....	M.	17	Mar. 1	"	Surg. neck	Considerable shortening	Fell 10 feet
C. S.....	M.	19	Aug. 12	"	Middle	.....	.....
J. F.....	M.	21	Nov. 23	"	Middle third		
(Same refractured.)			Jan. 23	"	Middle third	.....	Patient jerked his arm during passive motion
L. Allen.....	F.	23	Mar. 2	"	Junct. middle and lower third	Oblique displacement	Twisted by policeman
John Mahoney....	M.	28	Feb. 11	"	Surg. neck	.....	Fell one flight stairs
W. Dobersecker...	M.	58	Oct. 10	"	Surg. neck	No swelling, lower fragment displac'd inward	.....

OF BOTH TIBIA AND FIBULA.—Continued.

Splints. Applied. 1st.	Applied. 2d.	Applied. 3d.	Removed. 1st.	Removed. 2d.	Removed. 3d.	No. splints.	Result.	Anæsthetic.	Remarks.
July 24, A. M. n'xt d'y July 24, P. M.	July 25 2d day	Sept. 4 41st d'y (No. 4.) Oct. 3 71st d'y	July 25 2 days Sept. 4	Sept. 4 39 days	Oct. 3 30 days (No. 4.) No record	4 1	Union not very firm; allowed to go out with a splint on	.....	The second leg splint was applied because extension was made from the first and pressure was feared. (See same under Fractures of Os Femoris.)
Nov. 5 3d day	Dec. 18 46th d'y	Feb. 13 91st d'y union not firm	Dec. 18 43 days union not firm	Feb 13 55 days	March 1 17 days	3	Union firm	Ether	Patient was a great drinker.

OF BOTH TIBIA AND FIBULA.

Right Feb. 20 left 3d day	Left Mar. 15 28th d'y old one looks badly	.....	Right, April 15 56 days, left Mar. 15 25 days	..... Left, April 15 31 days	.....	r'ht 1 left 2	Slight overlapping of fragments; left perfect, but some necrosis	None	Patient almost died of hemorrhage before admission. It was intended to amputate both legs, but he was too weak.
June 11 2d day	.....	.....	No record	.....	.....	1	Union and position perfect	.....	This patient, contrary to orders, left his ward at night and slept in a tent with a case of pyæmia; erysip. migrans set in, and he died in about two or three weeks.
Oct. 26 in 12 h's	Dec. 14 46th d'y	.....	Dec. 14 46 days	Dec. 28 14 days	.....	2	Firm union; some necrosis	Chloro'm 1st sp.	Patient had a severe septicæmia, but recovered.
Sept. 11 2d day	Sept. 23 13th d'y 1st loose	Nov. 24 45th d'y only 1 fenestra	Sept. 23 13 days	Nov. 24 32 days	Jan. 15 51 days	3	Union and position perfect; some necrosis	None	It was at first intended to amputate, but afterwards it was concluded to try plaster first.
Apr. 26 2d day	No record	.....	No record	No record	.....	2	Perfect		
immediately	.....	.....	No record	.....	.....	1	Cured	.....	The wound was sealed with lint and collodion.
Mar. 26 6th day	.....	.....	May 10 44 days	.....	.....	1			

OF HUMERUS.

Sept. 16 2d day	.....	.....	Oct 25 39 days	.....	.....	1	Union good	.....	I find this boy also had fractured radius and ulna of opposite side.
March 1 same day	.....	.....	Mar. 31 31 days	.....	.....	1	No marked deformity, union good		
Aug. 15 3d day	.....	.....	Sept. 8 24 days	.....	.....	1	No deformity, union good		
Nov. 28 5th day	Dec. 16 23d day	.....	Dec. 16 18 days	Jan. 18 32 days	.....	2	Union and position good	.....	He pulled his arm very forcibly back during passive motion and snapped the bone in about the same place.
Jan. 24 2d day			Feb. 28 34 days			1	Union and position good		
March 3 2d day	.....	.....	Mar. 26 23 days	.....	.....	1	Firm union		
Feb. 14 3d day, gutta percha	Mar. 17 35th d'y plaster	.....	Mar. 17 32 days	Mar. 24 7 days	.....	2	Good union and motion, slight projection of upper fragment		
Oct. 10 1st day	.....	.....	Nov. 16 36 days	.....	.....	1	Good union	.....	Patient has had pneumonia while under treatment for the fracture.

COMMINUTED FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
Dennis Lyon.....	M.	11	June 2	Humerus comminut'd	Through the condyles, which are comminuted	.....	Fell on side-walk
Al. McArthur.....	M.	35	Sept. 30	Humerus comminut'd	Junct upper and middle third	.....	Fell on side-walk

COMPOUND FRACTURES

Hugo Listz.....	M.	11	July 24	Humerus compound, radius and ulna comp.	Both condyles head; 2 inches below joint	.....	Elbow caught in iron doors

COMPLICATED FRACTURES

Daniel ——.....	M.	7	Sept. 14	Humerus; radius dislocated backward	External condyle	.....	.....
Alice Delaney.....	F.	17	June 15	Humerus; femur	Middle third; middle third	.....	Struck by rocks from a distant blast
S. U. Clerk.....	M.	18	Jan. 21	Humerus; femur	Just above condyles; middle third	Oblique "	Fall 33 feet
M. C.....	M.	45	June 22	Humerus; ulna	Internal condyle; 1. Olecranon; 2. 1½ inch bel. coronoid process	.....	.....

FRACTURES

Not treated with plaster dressing.

Thos. Dumphy	M.	23	Jan. 13	Ulna	Upper third	Upper fragm't drawn forw'rd and upward	Fall on ground
Jer. O'Brien..	M.	27	April 28	"	Olecranon	.....	Fight
M. C.....	M.	45	June 22	" Humerus	1. Olecranon 2½ inch bel. joint; Internal condyle	.....	.....

FRACTURES OF BOTH

Hugo Listz....	M.	11	July 24	Radius com. ulna com. humerus com.	Head; 2 inches below joint; both condyles	.....	.....
Daniel Dillon.	M.	32	June 11	Radius comm. ulna compound.	Lower third; olecranon	Drawn up	Fell 50 feet

OF HUMERUS.

Splints. Applied. 1st.	2d.	3d.	Removed. 1st.	2d.	3d.	No. splints.	Result.	Anæsthetic.	Remarks.
June 12 10th d'y	.....	.....	June 24 12 days	.....	.....	1	Very slight anchylosis		
Oct. 5 6th day	.....	.....	Nov. 8 33 days	.....	.....	1	Union firm		

OF HUMERUS.

Immediately	Aug. 9 16th d'y	.....	Aug. 9 16 days	Oct. 24 75 days	.....	2	Good union; slight motion only	.....	He finally had motion through about 30 degrees. The joint was opened by the accident.

OF HUMERUS.

Sept 14 1st day	.....	.....	Oct. 1 17 days	.....	.....	1	Union and position good; some little stiffness at joint	.....	Passive motion was being used, but the boy ran away.
June 18 3d day June 17 2d day	July 7 22d day	.....	July 15 27 days July 7 20 days	July 25 18 days	.....	1 2	Perfect; ½ inch shortening, union and position perfect	Ether both times	
Jan. 24 4th day "	Feb. 5 14th d'y	.....	Jan. 28 4 days Mar. 11 46 days	Feb. 27 22 days	.....	2 1	Union and position good; ⅔ in. shortening	Ether	
July 1 9th day "	.....	.....	July 20 20 days "	.....	.....	1 same splint	Union and position good; 1. Fibrinous un. 2. Union and position good		

OF ULNA.

Jan. 20 7th day	.....	.....	March 6 44 days	.....	.....	1	Union and position perfect	Ether	Patient did not come to hospital until one week after injury.
April 28 1st day	.....	.....	May 17 19 days	.....	.....	1	Good apposition; union not firm	.....	Complicated by fracture of leg, the result of which is not recorded.
July 1 9th day "	.....	.....	July 20 19 days "	.....	.....	1	1. Fibrinous union 2. Good union and position Good union and position		

RADIUS AND ULNA.

Immediately "	Aug. 9 15th d'y "	.....	Aug. 9 15 days "	Oct. 30 52 days "	.....	2	Union and position good; some stiffness at elbow	.....	Motion through about 30 degrees.
June 11 1st day	.....	.....	July 18 37 days	.....	.....	1	Union firm; motion not perfect	.....	Arm moves through about 90 degrees.

SIMPLE FRACTURES

Name.	Sex.	Age.	Date.	Bone.	Point.	Shortening, deformity, etc.	Cause of injury.
M. James.....	M.	40	Oct. 10	Os calcis	.....	.....	Fell 30 feet
C. Driscol.....	F.	50	Oct. 12	Os calcis	.....	.....	Fell 4 feet

SIMPLE FRACTURES

L. McCarthy.....	M.	27	May 2	Meta-carpals, comp. com.	.....	.....	Nitro-glycerine explosion
L. Curry.....	M.	61	July 3	4 metatar-sals, comp.	.....	.....	.....

RUPTURE

H. Ward.....	M.	29	Oct. 3	Internal lat. ligaments of both knees	.....	.....	Caught on a shaft & carried between it and the wall
D. Callan.....	F.	57	Oct. 30	External lat ligam't, knee	.....	Dislocation of leg backward	Run over

SIMPLE FRACTURES

Charles O'Brien...	M.	33	April 19	9th rib	2 inches from cartilage	.....	Case of goods fell on him

AVERAGES.

FRACTURES OF FEMUR.

RESULTS.

Lengthening ⅛ inch, No. 1.
No shortening " 4.
Shortening of ⅛ " " 4.
Shortening " ¼ " " 5.
Shortening " ½ " " 7.
Shortening " ⅔ " " 1.
Shortening " ¾ " " 5. Good reason for poor result in some of these cases.
Shortening " 1 " " 1. No attempt to get full length.
Shortening " 1⅛ " " 1. Had bad delirium tremens.
Shortening " 1½ " " 9. In bed with pneumonia. The worst results of plaster of thigh are always in patients kept in bed.
Shortening " 2 " " 1. In bed with subacute pleurisy. The worst results of plaster of thigh are always in patients kept in bed.
Ununited .. .. " 1. No good reason ever found.

OF OS CALCIS.

Splints. Applied. 1st.	2d.	3d.	Removed. 1st.	2d.	3d.	No. splints.	Result.	Anæsthetic.	Remarks.
Oct. 10 1st day	.....	.....	Nov. 10 30 days	.....	.....	1	Union good		
Oct. 12 1st day	.....	.....	Nov. 13 31 days	.....	.....	1	Union good		

OF METACARPAL AND METATARSAL BONES.

May 14 12th d'y	.....	.....	June 5 21 days	.....	.....	1	Union not firm in first metacarpal; union firm in others	.....	Patient had also triple compound comminuted fracture of inferior maxilla.
July 11 7th day	.....	.....	July 29 18 days	.....	.....	1	Union firm		

OF LIGAMENTS.

Oct. 5 3d day	Not recorded	.....	Not recorded	Dec. 1 56 days	.....	2	Good union, but joints a little loose; ordered elastic knee caps.	.....	This shaft was revolving 120 times a minute; distance between shaft and wall 1 foot. Up and around on crutches Oct. 8.
Oct. 31 2d day	Nov. 18 19th d'y	Nov. 29 30th d'y	Nov. 18 18 days	Nov. 29 11 days	Dec. 19 20 days	3	Position good		

OF RIBS.

April 20 2d day	.....	.....	May 3 13 days	.....	.....	1	Cured		

AVERAGES.

PRACTURES OF FEMUR.

RESULTS.

Lengthening	is	1 or $\frac{1}{30}$	about of all cases.		
Shortening none and less	are	5 " $\frac{1}{6}$	"	"	
Shortening of ⅙ inch and less	are	9 " ⅓	"	"	
Shortening " ¼ " "		14 " ½	"	"	
Shortening " ⅓ " "		21 " ⅔	"	"	
Shortening " 1 " "		27 " $\frac{9}{10}$	"	"	
Shortening over 1 inch		3 " $\frac{1}{10}$	"	"	See cases for reasons.

AVERAGES.

Bone.	Age of patients.	Number cases	Cause of injury.	Time from injury to the application of the splint—in days.	Time splint remained on in days.	Number splints.	Result.
Simple fractures femur	1–10	4	.....	6¼ days; but Buck's extension was on 1 case 15 days; without this case 3 days	33 days	1	Shortening $\frac{7}{16}$ or — ½ in.
Simple fractures femur	10–20	3	.....	7 days; one on the 14th day; without this 3 + days	39 days	1½	Shortening $\frac{7}{24}$ or + ¼ in.
Simple fractures femur	20–50	13	.....	$4\frac{3}{10}$ days	$34\frac{7}{10}$ days	$1\frac{3}{13}$	Shortening $\frac{7}{12}$ or + ½ in.; cases making this result so high were confined to bed, a position which gives the worst possible results in plaster dressing of thigh.
Simple fractures femur	50–75	6	.....	$4\frac{1}{10}$ days; the case where splint was applied on 47th day is omitted as it was only put on that he might go about on crutches	38⅙ days	1	Shortening $\frac{29}{48}$ or about ½.
All simple fractures femur	1–75	26	.....	5⅙ days; usual time 3d day	36¼ days	$1\frac{1}{6}$	Shortening — ½ inch.
Compound and complicated fractures femur	.....	5	.....	3 days	$53\frac{4}{5}$ days; 1 was on 90 d'ys, an unusual time.	$1\frac{3}{5}$	Shortening $\frac{14}{60}$ or $\frac{1}{5}$ inch.
All fractures of femur	1–75	31	.....	4¼ days	45 days	$1\frac{2}{5}$, or nearly half required a 2d splint	Average result:— Shortening $\frac{35}{100}$ or little over ⅓ inch.
Simple fractures patella	19–36	6	Fall 3, musc.con. 2, No record 1	3 days	55⅓ days	2	Separation $\frac{11}{48}$ or about ¼ in. Good union bony 2 Firm " ligamentous 1. No record of union 3.
Adding one case of comp'd frac. we have all fracts. of patella	19–55	7	Fall 4, musc.con 2, No record 1	5½ days	This comp'd case carried a splint only 6 days; reason not giv'n	1½	Separat'n $\frac{11}{96}$ or ab't — ⅛ in. Good union bony 3. Firm union ligamentous 1. No record of union 3.
Simple fractures tibia	18–50	8	Slipped and fell on the ground 5, Direct violence 2, No record 1	—$1\frac{8}{7}$ days	49⅓ days; 5 weeks was the usual time allow'd for these cases	2	All right 7. Not firm 1.
Simple fractures tibia	50–75	4	.....	10¼ days; includes a case which came to hospital several weeks after injury; without this 4th day 2d day	35⅓ days	1½	All right 2. Union not firm 2. One of these poor cases is that sent to hospital several weeks after injury.
Compound and complicated fractures of tibia alone	19–34	3	.....		Poor record	2⅓	All right 3 One was even ¼ longer.
All fract'res of tibia	18–75	15	.....	4⅓ days	42⅙ days	2	All right 12. Not firm 3.

AVERAGES.

Bone.	Age of patients.	Number cases.		Time from injury to application of the splint—in days.	Time splint remained on in days.	Number splints.	Results.
Simple (Potts') fractures	25–65	6	.....	4th day	31 days	1	All right 5. Run away 1.
Compound (Potts') fractures	32–55	2	.....	7th day; one case did not come to hospital for 2 weeks after injury	45½ days	2½	All right 2.
All Potts' fractures	25–65	8	.....	5½ days	38¼ days	1½+	All right 7. Run away 1.
Simple fractures fibula	30–35	3	.....	3 days	38⅔ days	1⅙	All right 3.
Simple fractures both tibia and fibula	16–55 Bel'w 20 is 1 above 50 are 2	16	.....	$11\frac{3}{16}$ days	$43\frac{5}{11}$ days No record, 5 cases	$1\frac{9}{16}$ or 1½+	All right 11. Slight deformity 3. Shortening 1, of ⅝ inch. No record 1.
Complicated fractures both tibia and fibula	21–41	5	.....	$2\frac{1}{5}$ days	58⅕ days No record, 1 case	$2\frac{2}{5}$	All right 4. Union not firm 1.
Compound fractures both tibia and fibula	8–42 Bel'w 20 is 1	7 one of both legs is 8	.....	$2\frac{3}{16}$ days	$60\frac{3}{5}$ days No record, 3 cases	$1\frac{5}{8}$	All right 3. " except some necrosis 3. Slight overlapping 1. No record 1.
All fractures both tibia and fibula	8–55	28	.....	$2\frac{1}{16}$ days	$54\frac{1}{5}$ days	1¾+	All right 21. Slight deformity 4. Not firm 1. No record 2.
Total all varieties simple fractures leg	16–75	37	.....	3½+ days	37⅔ days	1½−	All right 28. Not firm 3. Slight deformity 4. Ran away 1. No record 1.
Total all varieties compound and complicated fractures of leg	8–42	17	.....	$3\frac{3}{10}$+ days	$54\frac{5}{8}$ days	2	All right 14. Lengthened (½ inch) 1. Union not firm 1. No record 1.
Grand total, all fract'res of leg	8–75	54	.....	3½ days	46¼ days	1¾	All right 42. Lengthened 1. Not firm 4. Slight deformity 4. Ran away 1. No record 2.

AVERAGES.

Bone.	Age of patients.	Number cases.	Place of fracture.	Time from injury to application of the splint—in days.	Time splint remained on in days.	Number splints.	Result.
Simple fractures humerus	12–58	7 one twice 8	Surg. neck 3 Shaft 4 No record 1	2⅜ days	34¼ days	1¼	All right 7. Slight deformity 1.
Both compound and commin'ed fractures humerus	11–35	3	Condyles 2 Shaft 1	5 days	45½ days	1½	All right 1. Slight motion 1. Slight stiffness 1.
Complicated fractures humerus	7—45	4	Condyles 2 Shaft 2	4¼ days	22½ days	1¼+	All right 3. Slight stiffness 1.
All fractures humerus	7–58	15	Surg. neck 3 Shaft 7 Condyles 4 No record 1	4 days	34¼ days	1¼	All right 11. Slight deformity 1. Slight stiffness joint 2. Slight motion joint 1.
Fractures ulna	23–45	3 or one do'ble 4	Olecranon 2 Shaft 2	5⅔ days	27½ days	1	All right 2. Fibrous union 2.
Fractures both radius and ulna	11–32	2	Elbow-joint involved 2	½ day	52 days	1½	Union and position good in both; but motion not perfect.
Fractures os calcis	40–50	2	.....	1 day	30½ days	1	All right 2.

When union is not PERFECTLY firm, it is recorded as "not firm."

The least *appreciable* deformity is recorded as "deformity."

WHAT THE WEST HAS DONE FOR AMERICAN SURGERY.

By PAUL F. EVE, M.D.,
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In preparing brief biographical sketches of eminent physicians of the southwest, for a cyclopedia, now in the course of publication, attention was directed by a friend to the valuable contributions made to the surgery of our country, by those who had resided in obscure villages or small towns of what was then known as the West; and by those too, with few exceptions, who enjoyed only the ordinary professional advantages in the early years of the present century. If true, this should at least be an encouraging circumstance to all engaged in medicine, whatever may be their resources for study or observation.

The following facts will explain what is here meant:—

1. *Amputation at the Hip-joint.*—The first successful amputation at this articulation in America, and it may be the first successfully performed in civil practice the world over, was done by Walter Brashear, M.D., of Bardstown, Nelson County, Kentucky, in August, 1806; the same year that the great American surgeons, Drs. Dudley and Ulott graduated in medicine. The patient was a boy of seventeen years; the method of operation, the circular, with incision over the trochanter major to complete the disarticulation. After his recovery he went to St. Louis, Missouri, where he was a resident in 1846.

At a public dinner, given to the celebrated Henry Clay by the City of New Orleans, Dr. Brashear being also present, to a sentiment complimentary to this operation, the great Kentucky orator exclaimed, "doctor, they have got you on the hip."

It was nearly twenty years, viz., in 1824, before this most formidable of all amputations was successfully repeated in this country, and it was then performed by the most skilful surgeon she has ever produced, the late Valentine Mott.

2. *First Excision of the Clavicle.*—In 1828 Dr. Mott published his case of excision of the clavicle for osteo-sarcoma, believing it at the time to have been the first operation of the kind ever performed. So formidable, too, did he consider it, that he subsequently called it his "Waterloo operation." Little did he suppose that here again he had been preceded by another Kentuckian just as he had been in the hip-joint amputation; and it so happened by about the same number of years. The first successful excision of the entire clavicle ever achieved was done by Dr. Charles McCleary, of Hartford, Ohio County, Kentucky, on the 4th of May, 1811, as reported by James H. Johnson, M.D., of New Orleans, Louisiana, in the *Medical and Surgical Journal* of that city for 1850. Dr. Gross, in volume ii. p. 1078, of his *System of Surgery*, says it was done in 1813, and on a boy of fourteen years, for scrofulous caries of the right collar-bone, who survived the operation many years.

3. *Ovariotomy.*—To Dr. Ephraim McDowell, of Danville, Boyle County, Kentucky, is the world indebted for an operation, now performed everywhere to the saving of thousands of lives heretofore condemned to a lingering death by an incurable affection. The cutting out of a diseased ovarium, successfully, was first done in the well-known case of Mrs. Crawford, in Danville, December, 1809. This was soon followed by two other cases, and the three published in 1816, in the *Eclectic Repertory and Analytic Review* of Philadelphia. The learned Dr. Gross, of Philadelphia, and talented Dr. John D. Jackson, of Danville, Kentucky, have convinced the profession that to a backwoodsman of America, without now the shadow of a doubt, we owe the origin of the most hazardous, delicate, and wonderfully successful operation in gynæcology.

4. *Extirpation of the Uterus.*—Prof. Gross, in his *Surgery*, vol. ii. p. 926, says: Vaginal hysterotomy was first performed in this country in 1830, by Dr. J. Briggs, of Kentucky. Prof. Bowling publishes the fact that Dr. J. M. Briggs, Sen., of Bowling-Green, Kentucky, has priority for this operation in the United States.

5. *Lithotomy and the due Preparation for a Capital Operation.*—Dr. Benjamin Winslow Dudley, late of Lexington, Kentucky, has confessedly done more with the roller and simple diet than any one who has practised medicine. No surgeon, by these simple means, ever accomplished so much. It was reserved for

him to teach the profession how to prepare a patient for a critical operation. He will long be known as the great lithotomist of the nineteenth century; it has been said of him that he operated one hundred times in succession for stone without a death or failure.

Here, then, in a few words, is what a single western State, Kentucky, has done for American surgery, and this too, in a period of some thirty years. Can as much be said of any other, or even an approximation to it? It does seem most wonderful—first in amputation at the hip-joint, first in excision of the clavicle, first in ovariotomy, first in vaginal hysterotomy, first in lithotomy. Kentucky should henceforth be the *banner* State for Surgery.

6. *Resection of the Inferior Maxillary Bone.*—On the 6th of February, 1810 William H. Deaderich, M.D., then a practising physician in Rogersville, Hawkins Co., Tennessee, removed nearly one-half of the lower jaw-bone, from a lad fourteen years of age, "without known precedent or professional counsel or aid." The patient fully recovered. This was the first operation of the kind ever performed, and was originally published in the *American Recorder* of Philadelphia, then in *Gibson's Surgery*. The case excited at the time great interest both in this country and Europe, Dr. Mott, Mr. South, editor of the English edition of *Chelius's Surgery;* Dr. Blackman, editor of *Mott's Velpeau's Surgery;* Dr. H. H. Smith, successor of Prof. Gibson; Prof. Gross, and others; have all admitted that this was the first operation of the kind. In the *Collection of Remarkable Cases of Surgery*, edited by myself in 1857, is a letter to Dr. Avent, then chairman of the Surgical Committee for Tennessee, 1853, now Professor of Surgery in the Memphis Medical College, from Dr. Lea, one of Dr. Deaderich's friends, dated December, 1822, which states that he induced Dr. Deaderich to publish this case. No one now doubts his claim to priority in this operation. The truth is, the operator was a gifted man in many respects, and was one of a talented family. His youngest brother is one of the present judges now on the Supreme Bench of Tennessee.

7. *Intussusception successfully relieved by Gastrotomy.*—In the *Transylvania Medical Journal*, 1835, republished also in the *American Journal of Medical Sciences* the same year, is the report of a case of intussusception by Mr. W. W. Thompson, then a student of medicine, of an operation, by Jno. R. Wilson, M.D.,

on a negro man, twenty years old, in December, 1831, then of Rutherford Co., Tennessee. Other means having failed, seventeen days after obstinate obstruction in the bowels, the abdomen was opened by an incision two inches above and three below the umbilicus, when the ileum was found invaginated, and threatened with mortification, was drawn out carefully and released; the wound then closed by sutures and plasters, when the patient soon voided the crude mercury he had taken the night before. He fully recovered. This was done, as will be remembered, in the days of slavery, and but for which it would probably never have been attempted. So hazardous an operation in regard to diagnosis and result has not yet met with much encouragement by the profession.

8. *Curative Treatment for Vesico-vaginal Fistula.*—It was while the distinguished J. Marion Sims, M.D., etc., was practising medicine at Montgomery, Alabama, that he successfully introduced the method for relieving one of the most deplorable affections in the female sex. He says himself, as if by inspiration, in the happy combination of the duck-bill speculum, silver suture, and sigmoid catheter, he finally succeeded in permanently closing the fistulous opening between the bladder and vagina. The details of his operation were first published in the *American Journal of the Medical Sciences* for 1852. His peculiar speculum has actually produced a new era in the treatment of female diseases. Dr. Sims now resides in New York city, is the bearer of the cross of honor from France, Belgium, Spain, Portugal, and Italy. He was surgeon-in-chief of the Anglo-American ambulance, at the battle of Sedan, which culminated in the downfall of the French empire under Napoleon III. He is also the author of several works on gynæcology, and the founder of the New York Woman's Hospital, valued at a million.

9. *Successful Application of a Ligature to the Brachio-cephalic Artery.*—Of fourteen published attempts to ligate the arteria innominata, the only one which the patient survived occurred to Dr. Andrew Woods Smyth, of New Orleans, Louisiana. The operation was performed in the Charity Hospital in that city, on the 15th of May, 1869. Its success is attributed by Dr. Smyth, and no doubt correctly, to his tying also the right vertebral artery. Ligatures had previously been applied simultaneously to the innominate and right carotid: but hemorrhages recurring at irregular intervals, at the end of fifty-four days, the operator tied

the right vertebral. Four months from the first operation the patient was announced to have fully recovered.

10. *Excision of the Ulna and Radius, the Usefulness of the Limb preserved.*—The operation of removing the entire ulna and radius, except a small portion of the lower extremity of the latter, was first performed by Dr. Compton in 1853, when he was connected with one of the medical colleges of New Orleans, and is published in the *Medical Register* of that city. Dr. Gross and Dr. Ashhurst admit it in their works on Surgery, and it is found in my collection of Remarkable Cases in Surgery. The accident requiring its performance occurred to a sailor boy, who, while asleep on the anchor-chain, was caught in its running out, and the limb severely fractured. April the 18th the doctor removed both radius and ulna entire, excepting a portion of the inferior end of the former bone. The forearm is two or three inches shorter than the other, but it has assumed a healthy condition, can be used to a limited extent, and the boy, eleven years of age, fully recovered.

11. *Extirpation of a Portion of the Os Coccygis for Neuralgia.*—The laté Prof. Josiah C. Nott, M.D., of Mobile, Alabama, first exsected part of the os coccyx for distressing nervous affection of the neighboring soft parts. This he did by removing two segments of this bone, in 1843, in a lady patient of twenty-five years who had been a great sufferer, and whom he partially relieved by it. This is believed to be the first instance of such an operation. The case is published in the *New Orleans Medical Journal* for May, 1844, and copied by the *American Journal of the Medical Sciences* for October of the same year. In Prof. Gaillard Thomas's edition of the celebrated *Accoucheur of London*, Prof. Barnes (whom I had the pleasure of meeting last year in London), it is stated that J. C. Nott, M.D., performed this operation for coccydinia fifteen years before the late Dr. James Y. Simpson did it.

12. *Successful Excision of Six Inches of Gangrenous Intestine in Hernia.*—Dr. Charles A. Luzenberg, while in charge of the Charity Hospital of New Orleans, Louisiana, soon after his return from Europe, 1834, laid open a strangulated hernia, and finding the intestine completely mortified, did not hesitate to remove the dead parts, stitched the serous surfaces together, and the patient fully recovered in thirty-five days. As early as 1832, he recommended the exclusion of light to prevent pitting of smallpox. Dr. Luzenberg died quite young, less than forty-three years old, but had already acquired the reputation of a veteran, and most skilful

surgeon not only in the land of his adoption, but also in Europe, where, like the great Physick, he was elected a member of the Academy of Medicine.

13. *Extirpation of the Kidney.*—The first and probably the only successful removal of the kidney performed in this country, occurred in the practice of Prof. G. T. Gilmore, M.D., now of Mobile (Alabama) Medical College, during December, 1870, the patient a negro woman aged thirty-three, and she pregnant. Prof. Simon, of Heidelberg, as is well known, revived the operations on this organ by the successful result of his case of extirpation in 1870, while it may be true that Marchetti, an Italian surgeon, had practised nephrotomy during the seventeenth century. Several recent attempts at these operations have all proved fatal. Dr. Gilmore, we believe, is the only one which has succeeded in America. His patient, as a recent letter informs me, has again been safely delivered of a living child. Of course the distinction is here made between the extirpation of the organ under consideration, and nephrotomy proper.

14. *Removal of the Crista Galli for Fracture of the Cranium; Patient surviving six days.*—This is believed to be the only case of the kind on record, and from the *Nashville Journal of Medicine and Surgery* for 1852, has been extensively copied. It may be the only one in which this portion of the cranium was ever removed by an operation. On the 15th December, 1851, the writer, assisted by the late Prof. John M. Watson and Dr. Conwell, still a practitioner of this city, relieved a patient who had been dashed out of a buggy against a telegraph pole, he being drunk while his horse ran away with him. The os frontis was extensively fractured, the shock so great that his pulse fell to forty-four, and his breathing became stertorous. Twelve pieces of bone were elevated, the hemorrhage from the nose ceased, and the circulation rose to sixty-two. In one of the fragments removed the crista galli, with the foramen cæcum, are distinctly recognized. The patient unfortunately became uncontrollable, would get out of bed, walk into an adjoining room, and in these movements struck his forehead. From the exposure to cold weather, so great that the wet cloths applied to his head and wound would freeze, it became necessary to remove him a distance of some hundred yards, to a room with a fire. Cerebral meningitis had, however, supervened, and he died on the sixth day: having, however, lived long enough

to create hopes that, under more auspicious circumstances, he might have recovered. Was this possible?

In the collection of these cases during the ordinary professional labor of the past few days, it will be perceived that it has been limited to four of the original Western States; still it may possess sufficient interest to claim a passing notice even of the Association. It certainly must be a surprising fact to learn how much American surgery is due to the pioneers of the profession during the first quarter of the present century. It may do us all good to acknowledge our debt of gratitude to those named in this paper, even though its merits fail to secure the *imprimatur* of this meeting of the American Medical Association.

MINUTES OF THE SECTION

ON

MEDICAL JURISPRUDENCE, CHEMISTRY, AND PSYCHOLOGY.

MINUTES OF THE SECTION

ON

MEDICAL JURISPRUDENCE, CHEMISTRY, AND PSYCHOLOGY.

THE Section met on Tuesday, at 2.30 P.M. There being no members present except the Chairman, Dr. A. N. TALLEY, and the Secretary, Dr. E. LLOYD HOWARD, the Section was adjourned until Thursday.

On Thursday the Section met at 2.30 P. M. Dr. TALLEY, Chairman, Dr. HOWARD, Secretary, and two other members being present.

Dr. A. N. TALLEY presented an abstract of a paper on *The Relations of Psychology to Practical Medicine.*[1]

Dr. E. LLOYD HOWARD read a paper on *The Legal Relations of Emotional Insanity.* Both papers were referred to the Committee of Publication, and the Section adjourned.

A. N. TALLEY, *Chairman.*
E. LLOYD HOWARD, *Secretary*

[1] Not furnished to the Committee of Publication.

THE LEGAL RELATIONS OF EMOTIONAL INSANITY.[1]

By E. LLOYD HOWARD, M. D.,
OF BALTIMORE, MD.

It is not the purpose of this paper to discuss, at any length, the pathology of Moral Insanity, nor to enter upon any extended examination of the peculiar features which characterize it, but rather to consider it with reference to some of those medico-legal questions constantly arising from the diverse views of insanity generally, and of emotional insanity specially, held by the professions of law and medicine.

The plea of insanity is now so commonly urged in criminal trials, and in several late noted cases has been so successfully used to defeat justice, that it becomes necessary, for the protection of society, to consider the proper means for checking so great and growing an evil,—while medical science and medical men are unjustly reproached with inventing "new forms" of insanity, with shielding outbursts of passion under the garb of "impulsive" insanity and exhibitions of moral depravity as "moral insanity," until all medical testimony has come to be looked upon with the greatest distrust. It must be admitted that medical men have, occasionally, been too ready to express in the witness-box opinions as to the sanity or insanity of a prisoner based upon insufficient evidence; yet, we believe, the confusion and misunderstandings in these cases are mainly attributable to the unsettled condition of criminal law in its relations to insanity;—the conflict between old judicial decisions, taken as precedents, and modern psychological medicine, and the consequently

[1] At the St. Louis meeting of the Association, in 1873, in an informal discussion of the subject of moral insanity before the Section on Medical Jurisprudence, the writer expressed substantially the views herein stated, and this paper was prepared, at the request of the Section, to place those views in more definite form. Since writing it, the author has seen, by newspaper report, that Prof. Wm. A. Hammond has recently, in New York, taken very similar ground.

different stand-points from which physicians and jurists view the matter. Looked at from the legal stand-point, it is easy to understand why cases of "impulsive" insanity are received with incredulity; while to the medical mind their existence is beyond doubt.

The term "emotional insanity," as used by most late writers, includes the two forms of "moral" and "impulsive" insanity; and it is commonly one of these forms that gives rise to the misunderstandings and disputes in criminal practice.

Dr. Pritchard, one of the earlier writers upon this subject, has defined *moral insanity* to be a "madness consisting in a morbid perversion of the natural feelings, affections, inclinations, temper, habits, moral dispositions and natural impulses, without any remarkable disorder or defect of the intellect, or knowing and reasoning faculties, and particularly without any insane illusions or hallucinations." Dr. Carpenter states it more strongly, as, "moral insanity *may* and frequently *does* exist without any disorder of the intellectual powers or any delusion whatever."

Impulsive insanity is said to exist "where the crime itself is held *to be evidence* of the insanity, and is accounted for upon the theory that the person is suddenly and insanely impelled to commit it." Dr. Carpenter says: "It is unquestionable that many criminal actions are committed under the irresistible dominance of some insane impulse, the individual being at the time perfectly aware of the evil nature of those actions, and of his amenableness to punishment for them." Speaking of the two forms together, he states: "There may, however, be no primary disorder of the intellectual faculties, and the insanity may essentially consist in a tendency to disordered *emotional* excitement, which affects the course of thought, and consequently of action, without disturbing the reasoning processes in any other way than by supplying wrong materials to them."

Though some medical writers refuse to admit the correctness of the definitions given, and a few even deny the proper existence of these forms of insanity, the denial, it seems to us, is based rather upon technical than practical grounds. The objection they make is, that "the insanity is not confined *exclusively* to the emotional faculties," contending, that "the mind cannot be properly separated into such 'faculties' as of the 'intellect,' the 'emotions,' and the 'will;' but must be considered in its entirety;" and that "no one part may be diseased with the others remaining in a perfectly healthy state." While this may, strictly

speaking, be true, yet the terms are useful as specifying forms of insanity that possess certain prominent and characteristic features; and in this sense they are permitted by all late writers. All admit that there are cases in which the intellectual faculties and the will are but slightly affected, if at all, and where the *moral perceptions* are palpably disordered; and, again, those in which criminal impulses have suddenly, and without any special premonitions, occurred, and been the occasion of homicide, suicide, etc., without any notable impairment of the intellectual faculties being apparent.

While the experience of all recent *medical* writers then, is concurrent and conclusive that insanity very frequently exists without delusion, and that very frequently insane persons are able to discriminate between right and wrong, the *jurist* remains trammeled by decisions and precedents that can only recognize insanity when accompanied by delusion, or a deficiency in the ability to discriminate right and wrong! Under these circumstances it need be no cause for surprise to find confusion and mal-administration of justice, when medical expert testimony is brought into court!

To adduce arguments to a medical man, at this late day, to prove that a person may be insane, and yet possess the power of discriminating between right and wrong, would be superfluous, and a waste of words. In every asylum "we may see patients who are given to tearing up their clothes, and who know, as well as any one, that what they do is wrong, and they delight in doing it *because it is wrong*." If the old legal test of knowledge of right and wrong were strictly applied, probably half the inmates of our asylums would have to be released. And so with "impulsive" insanity; there are many persons who are perfectly conscious that their acts are wrong, indeed, who will admit that they are wrong-doing, alleging that "they know it is wrong, but yet cannot resist the impulse to do it." Persons have even voluntarily sought the refuge of asylums, asking to be confined and guarded to prevent their committing crimes, which they appreciate the heinousness of, but feel an irresistible impulse to perpetrate. Many interesting and instructive cases of these forms of insanity have been recorded, which prove, beyond all doubt, that insanity *does* sometimes exist without delusion, and where the intellectual faculties, if not absolutely unimpaired, are yet in such a state of integrity that the patient is perfectly con-

scious of the unlawfulness of his acts, and of his responsibility for them and amenableness to punishment!

In neither form of emotional insanity will the test of "knowledge of right and wrong" avail. Under its application we must decide all these cases to be "not insane;" and we find the same unreliability in the so-called test of "delusion." Indeed, with our present notions of disease, it were absurd to expect any one symptom to be so characteristic of insanity that that condition could be predicated upon its presence or absence. Mental, as with the more strictly physical, functions so insensibly shade from healthy to morbid action, that, nowhere can we draw the line sharply separating the one from the other.

There are probably but few of us who have not, at some time, in our own persons, experienced impulses to do things that are inexplicable, even to ourselves, and that closely border upon insane impulse! Where there is no perceptible motive, nay, where every rational consideration impels to an opposite course of action, we sometimes feel a prompting to do something—not a crime, it may be, but simply a folly—that is only prevented by an active exercise of the reason and of the will! Now it is easy to suppose a condition in which the prompting is a little stronger, the corrective or restraining action of the will feebler, and we have a state in which crime might readily be committed, and yet it would be difficult to define a condition of insanity! There can be little doubt that suicide is not infrequently induced in this state; and where it exists in a more marked degree, arson, or homicide may result. It is of these cases Dr. Carpenter speaks when he says, "It is unquestionable that many criminal actions are committed under the irresistible dominance of some insane impulse, the individual being at the time perfectly aware of the evil nature of those actions, and of his amenableness to punishment for them." The cases in which murderers have declared their crimes to have been committed in the manner here spoken of, and the strongly corroborative circumstances, leave no room for a reasonable doubt upon this point. That such persons are really insane, seems clear; *that they should, on this account, not be held amenable, is not at all so clear to our mind.*

The application of criminal law in cases of supposed, or alleged, insanity was comparatively easy under the old ruling;"—that insanity could only be admitted to exist when there was a *complete* inability to discriminate right and wrong!" It is so palpably unjust to punish one for an action, who is incompetent to form or

hold opinions of the right or lawfulness of his acts, that, to prove insanity—with this definition attached—was to secure an acquittal. And not only would it seem unjust to punish one who was ignorant of the fact of the illegality of his acts, and was even destitute of the ability to comprehend his duties, however desirous he might be to do so; but, the *example* of such a punishment would be lost, both to the subject himself, and to the community—he being unable, from mental deficiency, to associate, in their proper relations, the act with the punishment—the community losing sight of the lesson sought to be conveyed, in its sympathy with the sufferer. It was from such considerations that it came to be recognized as a maxim in law, "that an insane person cannot commit crime."

As our knowledge of insanity has become more settled and thorough; as we have come to a clearer appreciation of the, so-called, "partial" insanities; and, as we are now compelled to admit that many insane persons *do* have a knowledge and discrimination of right and wrong,—at the same time the law not making a proper advance from its old maxims and decisions,—the application of criminal law becomes involved in most serious embarrassments. On the one hand, it debars many, unquestionably insane, from the protection they ought to receive; while, on the other, many persons are technically proven insane, and escape the punishment which ought to be awarded; the law being too limited in its scope in the one direction, too broad in its application upon the other.

The law as it stands now is very unsettled. In England it seems to declare: "If the accused person at the time of committing the offence knew right from wrong, and *that he was doing wrong*, he must be brought in guilty, whether insane or not!" It will be noticed this is an advance on the older rulings, which required *a total and general ignorance* of the distinction of right and wrong as essential to an acquittal on the grounds of insanity, (or the existence of delusions to be proven), inasmuch as it requires that the person, at the time of committing the offence, *must know he is doing wrong in that particular act!* Yet this advance is far behind the requirements of right and justice; as it is now notorious that a great many insane persons know the wrongfulness of their actions, and yet ought not to be considered responsible. And so we find that: "Juries often, and judges occasionally, out of a natural humanity, repudiate this dogma in

particular cases;" and the operation of the law is most uncertain and variable.

In the United States, while the same uncertainty to some extent prevails, the older rulings and decisions, and the so-called "tests" of insanity are oftener repudiated as fallacious; and the rulings of our courts—more untrammeled by theories, and based upon common-sense views,—are more consonant with the requirements of justice. In a late case the court instructed the jury, "that they should return a verdict of 'not guilty,' if the killing was the offspring of mental disease in the defendant; that neither delusion; nor knowledge of right and wrong; nor design or cunning in planning and executing the killing, and in escaping or avoiding detection; nor ability to recognize acquaintance, or to labor, or transact business, or manage affairs, is, as a matter of law, a test of mental disease; but that all symptoms, and all tests of mental disease, are purely matters of fact, to be determined by the jury." We find here, the jury are instructed, not to inquire whether the prisoner is "insane," *according to any theory or test of insanity;* but, to consider all the circumstances of the case, from a common-sense stand-point, and to give a verdict accordingly. Dr. Maudsley, in commenting upon this, thinks, "in the future, the question submitted to the jury will probably be: 'Was the act the offspring or product of mental disease?'" He evidently holds to the view, "that it is impossible, and probably ever will be so, to give any 'test' for insanity; each case must be examined by the light of all its surroundings; if insanity is found to exist in the individual, and if the offence is the *result* of that insanity,—(or the product of mental disease),—he must be held irresponsible." While this is a vast stride in advance of the older views, we cannot think it comes up to the requirements of the occasion. Lord Hale says, we must be careful, "lest, on the one side, there be a kind of inhumanity towards the defects of human nature; or, on the other side, too great an indulgence given to great crimes;" the latter seems to be now our most imminent danger.

The revised statutes of New York enact that, "no act done by a person in a state of insanity can be punished as an offence." Under this, there can be little doubt, room is afforded for the escape from punishment of many criminals, if at all literally construed. In France and Germany there are somewhat similar laws, they being only general enactments; leaving each case to

be decided upon its own merits, that is, as to whether or not insanity exists, and is connected with the crime in a causal relation.

It being impossible, then, to define insanity by any "test symptoms," each case should be examined by the jury *in itself;* and they must be left free to judge of the value of *all* facts in connection with it. This seems to be the tendency of our more recent rulings; and it is the more humane, more just, and proper course; and a great advance over the older methods—better calculated to do justice to the prisoner; if not to protect the community. But we cannot refrain from hazarding the opinion, that the ends of justice would be better subserved; the security of society more certain; and the rights of individuals more secure, if the laws—both statute, and those ordained by custom and sanctioned by previous rulings of the courts—exempting insane offenders from punishment, were repealed; leaving the jury to determine the guilt or innocence of the prisoner, *not* on the grounds of insanity, but from *all the facts;* considering in each case, where insanity is alleged, its value, if proven, as an element in forming an opinion as to the degree and extent of punishment!

No doubt it will seem cruel, to many, to advocate the doctrine that insane persons should *ever* be made to suffer criminal punishment! But, we must remember, the law is not to take cognizance of the sufferings of the individual, so much as of the safety of the community. This is its prime object; to be secured at all cost; and mercy can only be considered, *as subordinated to this first requirement!*

All modern criminal law is based solely upon the principle of *protection to society.* It recognizes, in its administration, nothing of the spirit of vengeance, or retaliation upon the criminal! It imprisons, or it kills, not because the culprit *deserves* imprisonment or death! Its penalties are never imposed with a view to cause suffering simply because it is thought *merited;* and as an *atonement* for the crime! But, always, its only and sole object is to protect the community;—either by depriving the criminal of further opportunity to commit crime; or, through the example it offers, to deter others from the perpetration of similar misdeeds! Laws are passed to protect each individual in the enjoyment of life, property, and his other rights and privileges; and with punitive provisions, that warn others not to interfere with those rights; and, when crime is committed—that is, when the rights of another are invaded—punishment is enforced to impress the fact, that

transgression is not only forbidden, but will be inevitably followed by disastrous consequences to the transgressor! There is no natural, inherent right in any government, or power, to deprive any man of liberty or life? The power is assumed by common consent, for the common safety, and is only justified by the law of self-protection; and it becomes a brutality and a tyranny when used beyond these strict requirements. But the great natural law of self-protection is supreme. It has no limits in its proper application. If any member of the community is, either through his own voluntary act, or some combination of unfortunate circumstances, detrimental to the community, the community must protect itself from him! If it be through his own voluntary act—as a wilful murder—then a punishment is inflicted to prevent a repetition of the act by the same person, or by others. If it be through no *fault* of his, but a misfortune—as when a homicide is committed in an attack of mania—then the community protects itself by putting the offender in confinement; but no *punishment*, as such, is inflicted, because it could have no good effect; as other maniacs would not be thereby deterred from homicide—having no proper conception of the relation of the punishment to the crime.

But, is it true that punishment, or the prospect of punishment, would have no good effect as applied to insane persons? Is it not a notorious fact that constantly, both in, and outside of, asylums, insane patients are governed by fear, and restrained through dread of punishment? Having seen that it is not at all uncommon for cases of emotional insanity—men clearly and undoubtedly insane—to be possessed of the ability to discriminate between right and wrong, and to have sufficiently clear intellectual perceptions of the nature and penalties of crime, could not some provision be made for controlling them through fear of punishment; while, at the same time, recognizing the fact of their insanity? Both as a matter of protection to the community, and of benefit to themselves, would it not be wise to apply to many cases of "moral," and "impulsive" insanity, the same restraining influences we find efficacious for *sane* criminally disposed persons?

As an epidemic mania for suicide in young women was checked by a law ordering the bodies, of those so destroying themselves, to be exposed, naked, to the public view; so, we believe, *murder-manias might be greatly controlled by judicious laws!* "An extremely good example of the deterrent influence of a judiciously

devised punishment was afforded by the stop which was put to the repeated alarms to which the Queen was subjected, after the real attempt made upon her life by Oxford. The motive in his case seemed to be nothing else than morbid vanity; which was gratified by his being tried for high treason, and made an object of public notoriety. Being found "not guilty" on the ground of insanity (to which it was proved he had an hereditary predisposition), and being placed in Bethlehem Hospital as a lunatic, no corrective impression as to *punishment* was made upon the class from which he sprung; and the like morbid love of notoriety led one young fellow after another to threaten the life of the Queen, by presenting pistols or other weapons when she appeared in public. In order to protect her from the repetition of this outrage, a bill was carried through the legislature in the shortest possible time, making the offence of presenting any fire-arm at the Queen (even if unloaded), a *disgraceful* one, to be punished with *whipping;* and no more was heard of such attempts."

If, then, there are cases in which the fear of punishment acts upon the minds of persons unquestionably insane with a wholesome and restraining influence, is it not right and proper that the community should receive the protection which can be given it by the enforcement of the laws in such cases, as in those where insanity does not exist? If it be made certain that punishment will inevitably follow swiftly upon the steps of those who do injury to the persons or property of others, many, having the insane temperament, or with "partial insanity," will be controlled, and have their powers of resistance to insane promptings strengthened, who might, with a less certain prospect of punishment before them, give way to their evil impulses!

It is not contended that no distinction should be made between sane, and insane criminals; or that each should be punished with a like severity! Of course there are many cases in which it would be most cruel and unjust, and subserve no good purpose, to inflict any punishment other than that implied in confinement in an asylum! But any attempted, definite legislation, to afford protection to this class must fail—just as all attempts to cover such cases by definite judicial rulings have failed—because it must ever be impossible to give a strict, and accurate definition, that shall embrace this one class *only!* The only way, in our opinion, to practically reach the difficulty, is to render *all* criminals, whether insane or not, equally *liable* under the law; leaving the court, and

jury, free to determine the kind, and degree of punishment, in each individual case; taking into consideration all the features of the case; investigating the facts of the insanity, as part of the facts of the case, and as *palliative* circumstances only! Confinement in a penitentiary is not a more severe punishment, in reality, than in the cells of a mad-house; but, from being commonly regarded as *punitive*, the fear of it would exercise a more wholesome restraining influence over a large class of the "partially insane."

In the event of striking from existing laws all that gives exemption from punishment to insanity, *per se*, it might be seriously inquired, whether the abolition of capital punishment, with some curtailment of the veto power, would not be an improvement to the penal code?

The main objects of this paper have been to expose the fallacy of the law which holds that, "the insane cannot commit *crime*;" to show the true cause of the misunderstandings of the legal and medical professions, growing out of expert testimony; and the injustice of the charges so commonly heard against the latter, of shielding the criminal by the invention of "new forms" of insanity. It often happens that the medical witness must testify that a criminal is *insane*, and so secure an acquittal, while his opinion, that he should nevertheless be held amenable for his actions, cannot be received.

MINUTES OF THE SECTION

ON

STATE MEDICINE AND PUBLIC HYGIENE.

MINUTES OF THE SECTION

ON

STATE MEDICINE AND PUBLIC HYGIENE.

JUNE 2d.

THE Section met at 2.30 P. M. Dr. A. N. BELL, of New York, Chairman, presided.

The Secretary, Dr. A. B. STUART, of Minnesota, being absent, Dr. FRANKLIN STAPLES, of Minnesota, was chosen Secretary *pro tem.*

The Chairman introduced the business of the Section by presenting three principal topics for consideration, which topics, together with a plan of work for the year, he had submitted to the members of the Section early in the year, in the following circular:—

BROOKLYN, N. Y., June 7, 1873.

To the Section on State Medicine and Public Hygiene; American Medical Association:—

GENTLEMEN: In assuming the functions imposed upon me as your Chairman for carrying out the objects contemplated by the American Medical Association in the organization of this important Section, and recognizing the impracticability of a personal conference, or timely practical conclusions from correspondence, I take it for granted that you expect of me some suggestions for the cultivation of the field of labor to which we have been assigned.

To us has been committed the duty of inquiring into and mapping out the field in this country, in which medical science and engineering skill may be most fruitfully applied and most speedily instituted for the protection of the public health. Each member of the Section has a large field of labor, and each one is expected to fill his own sphere. The field is an exceedingly fertile one, and it would far exceed our limits for the present to

even name the subject matters connected with State Medicine and Public Hygiene.

Certain matters were especially committed to us. First, the resolutions of your Chairman:—

"*Resolved*, That in the judgment of this Association the establishment of a National Sanitary Bureau, with relations to the General Government, similar to those of the Bureaus of Agriculture and Education, is highly desirable as a means of promoting sanitary science and the protection of the public health.

"*Resolved*, That this Association request of the United States Educational Bureau to so extend the scope of its inquiry as to include vital, disease, and mortuary statistics in relation to local, meteorological, and geological influences, and to disseminate the information so collected throughout the country."

Second, the resolutions of Dr. Frederic Horner, Jr., U. S. Navy:—

"*Resolved*, That in view of the alarming prevalence and ill effects of intemperance, with which none are so familiar as members of the medical profession, and which have called forth from eminent English physicians the voice of warning to the people of Great Britain, concerning the use of alcoholic beverages, we, the undersigned members of the medical profession of the United States, unite in the declaration that we believe alcohol should be classed with other powerful drugs; that when prescribed medicinally it should be done with conscientious caution and a sense of great responsibility.

"*Resolved*, That we are of opinion that the use of alcoholic liquors as a beverage is productive of a large amount of physical and mental disease; that it entails diseased appetites and enfeebled constitutions upon offspring; and that it is the cause of a large percentage of the crime and pauperism of our cities and country.

"*Resolved*, That we would welcome any change in public sentiment that would confine the use of intoxicating liquors to the uses of science, art, and medicine."

How best to dispose of these subjects, please favor me with your suggestions, at your earliest convenience.

On State Medicine.—I would also be glad to receive your suggestions as soon as practicable.

Public Hygiene.—Of the many subjects falling under this head, it is eminently proper that we should select some one, or

such as can be made most readily practicable, for the protection of the public health.

Of all the preventable causes of disease throughout the country, *defective drainage* is, unquestionably, the most prolific. Directly or indirectly, it is the cause of not less than nine-tenths of all the fevers that occur. Of consumption, soil moisture is well known to be one of its chief causes.[1]

Your Chairman would, therefore, suggest that we take up the single subject of *defective drainage.* And in this connection your attention is invited to the plan of work instituted for the State of New York, hereunto appended. Let it be the duty of each member of the Section to use his best effort for the speedy organization of committees on Hygiene in every county, or other Medical Society, of his State; and in addition to this means, or where medical organizations are not accessible, use such other means as may be present. In this way we may reasonably expect to obtain a large amount of information in a comparatively short time, and *use it.* Meanwhile, to the end that all information obtained may be made as speedily and extensively beneficial as possible, you are requested to make your Chairman a means of reciprocal benefits; make him both the repository and the means of communicating the information you may severally obtain, for the benefit of each other. By this we shall be enabled to verify that which is useful, or to reject that which might otherwise receive undue attention.

Finally, that there may be sufficient time for the arrangement of our joint report to the Association, you are requested, each one for himself, to sum up the work in your respective spheres, and forward it to me, on or before the first of April next.

A. N. BELL, M. D.,
Chairman of the Section on State Medicine and Public Hygiene.

To the County Medical Societies of the State of New York:—

In accordance with the recommendation of the President of the Medical Society of the State of New York, in February last, the following resolutions were adopted:—

1. That the Standing Committee on Hygiene shall be added to, and hereafter recognized among the standing committees of the Society.

[1] Dr. Henry I. Bowditch.—Annual Discourse, 1868. 4th Annual Report, Board of Health, State of Mass., p. 365.

2. That the Standing Committee on Hygiene shall consist of seven members.

3. That the Secretary be directed to send a circular to each County Society, urging the formation of Committees on Hygiene, to collect and discuss facts in accordance with the recommendations of the President.

4. That the Standing Committee on Hygiene place itself in immediate correspondence with the Committees on Hygiene of the County Societies.

The following were appointed the Standing Committee of the State Society:—

A. N. Bell, M.D., *Chairman*, Brooklyn; S. O. Vanderpoel, M.D., Health Officer of the Port of New York; H. D. Didama, M.D., Syracuse; H. W. Dean, M.D., Rochester; John Ordronaux, M.D., Roslyn, L. I.; Stephen Smith, M.D., New York; C. R. Agnew, M.D., New York.

After mature deliberation, correspondence and personal intercourse, as far as practicable—covering a large field of inquiry for the future—the Committee has determined that the work of primary importance throughout the State is *drainage*. And to the end that as much information may be obtained on this subject as practicable, the following points of inquiry are submitted, and commended to all of the County Society Committees:—

1. To what extent are the diseases of your county due to insufficient drainage?

2. How many acres of marsh lands have you in your county?

3. Have you intermittent diseases not attributable to marshy deposits, but to soil saturation?

4. Are there in your county places where intermittent fever has disappeared as a result of systematic drainage of the surface saturation?

5. What system of drainage is necessary to render your county free from malarious diseases?

The Secretary of every County Society is requested to inform the Chairman of the Standing Committee of the State Society as soon as practicable, of the appointment of its Committee on Hygiene, and of whom it is constituted. And the Chairman of the Committee on Hygiene is requested to send the report of his Committee to the Chairman of the Standing Committee of the State Society, on or before the first day of January next, that it

may be included in the Report of the Committee at the annual meeting.

A. N. BELL, M.D.,
Chairman of the Standing Committee on Hygiene of the Medical Society of the State of New York.

The Chairman announced, that, in reply to the circular, the following papers had been received from members, and were submitted to the Section:—

Arkansas. Dr. D. A. LINTHICUM, a Report on State Medicine and Public Hygiene.

California. Dr. T. M. LOGAN, a Report on State Medicine and Public Hygiene.

Connecticut.—Dr. B. H. CATLIN, a Report on Defective Drainage.

Florida.—Dr. R. D. MURRAY, a Medico-topographical Report of Key West, with especial reference to consumption.

Iowa.—Dr. J. J. M. ANGEAR, a letter on Defective Drainage, confined to Green Bay Township.

Massachusetts.—Dr. HENRY I. BOWDITCH, Report concerning the Organization and Practical Working of the Massachusetts State Board of Health, and concerning a National Sanitary Bureau.

Michigan.—Dr. R. C. KEDZIE, a paper containing: 1. A Report on Resolutions, submitted to the Section; 2. Arguments in favor of the establishment of a National Sanitary Bureau; 3. A Report on the Influence of Drainage on the Public Health of Michigan.

Minnesota.—Dr. A. B. STUART, a paper containing: 1. A General Report on Resolutions, submitted to the Section; 2. Suggestions in Favor of a National Sanitary Bureau; 3. A Support of the Principles of Dr. Horner's Resolutions; 4. A Report on Defective Drainage.

New Hampshire.—Dr. J. W. PARSONS: 1. Sketch of the Failure of an Effort to establish a State Board of Health; 2. Suggestion favoring the Moral Support of Dr. Horner's Resolutions; 3. Arguments in favor of a National Sanitary Bureau.

New Jersey.—Dr. E. M. HUNT, a Report concerning the Want of General Information concerning Hygienic Laws, the Lack of Appropriate Legislation, and announcing the Passage of a Law creating a Sanitary Commission.

New York.—Dr. A. N. BELL, a paper containing: 1. A Report on Defective Drainage as a Cause of Disease in the State of New York; 2. Arguments showing the present untimeliness of a National Sanitary Bureau.

Virginia.—Dr. J. L. CABELL, a Report on Defective Drainage as a Cause of Disease within the limits of the State of Virginia, comprehending the experience of eighty observers and covering forty-nine counties.

The subject of the first resolution, viz., that for the establishment of a National Sanitary Bureau, was taken up.

The paper of Dr. HENRY I. BOWDITCH, of Massachusetts, on the subject under consideration, and concerning the organization and practical working of the Massachusetts State Board of Health, having been called for, was read by the Secretary.

Dr. R. C. KEDZIE, of Michigan, spoke in favor of the establishment of such a department, and argued that, when established, it should be independent and not subordinate to any other branch of the government.

The paper of Dr. A. B. STUART, of Minnesota, advocating the establishment of a National Bureau, was read by the Chairman. (See paper of Dr. Stuart.)

The Chairman, Dr. BELL, in his own report, abstracts of which were read, maintained that the formation of a national bureau was impracticable until State Boards were general and not exceptional.

Dr. BELL supplemented his paper by remarking that since the last meeting of the Society, Maryland had gained a State Board of Health, making the sixth, and that New Jersey had formed a commission of inquiry looking toward the same end.

Dr. BROWN, of Texas, said that steps had been taken in his State to form such a State Board, and the matter had been reported upon in the Legislature.

Dr. R. C. KEDZIE, of Michigan, introduced the following resolution:—

Resolved, That it is expedient for this Association to petition Congress at once to establish a National Sanitary Bureau.

Drs. H. W. BROWN, of Texas, W. E. WESTMORELAND, of Georgia, FOSTER PRATT, of Michigan, H. A. JOHNSON, of Illinois, J. H. VAN DEMAN, of Tennessee, M. WATERHOUSE, of Wisconsin, W. W. JONES, of Ohio, H. O. HITCHCOCK, of Michigan, and E. W. GRAY, of Illinois, favored the resolution.

Dr. H. B. BAKER, of Michigan, insisted that a national bureau should be had at once, not for the purpose of displaying what knowledge we had of public hygiene, but of adding to and acquiring that very knowledge. A national organization should

be had for the very reason that many States were derelict in forming public boards of health and thus interposing no sanitary barriers to the spread of epidemics to the very borders of other States which had those safeguards to the public health.

The Chairman, Dr. A. N. BELL, of New York, said it was less than half a dozen years since the first State Board of Health had been established, and the physicians themselves were not settled as to what was needed by such organizations and their powers and duties. From this he argued that it was inconsistent and undesirable to ask for a national bureau without securing first perfect local and primary organizations. The country was constantly progressing; science was also making great progress, and the time would shortly come for the formation of a national bureau. He only differed with the resolution because it asserted that the time had already come for a national bureau.

Drs. W. F. THOMS, of New York, J. COCHRANE, of Alabama, and E. L. HOWARD, of Maryland, held similar views as those expressed by Dr. Bell.

On motion the resolution of Dr. Kedzie was adopted.

Dr. H. A. JOHNSON, of Illinois, presented the following resolution, which was adopted:—

Resolved, That with a view to the establishment of a national sanitary bureau it is expedient, at the present time, to press, through State medical societies and physicians everywhere, upon the Legislatures of the several States, the importance of establishing State Boards of Health.

On motion the Section adjourned.

JUNE 3d.

The Section met at 2.30 P. M. The Chairman presided, and Dr. W. W. JONES, of Ohio, was chosen Secretary *pro tem.*

The regular topic which had been assigned to the day was that of *Defective Drainage*, and the subject was opened by Dr. R. C. KEDZIE, of Michigan. (See paper of Dr. Kedzie, entitled, "The Influence of Drainage upon the Public Health of Michigan.")

The Chairman announced that without any conference between the gentlemen, Dr. J. L. Cabell, of Virginia, had prepared a report on the effects of drainage on the public health of Virginia, and had taken precisely the same method as Dr. Kedzie, *i. e.*, inviting replies from physicians. A number of extracts were read from Dr. Cabell's report, the conclusions reached being

that one-half of all the mortality, and sometimes three-fourths, was caused by defective drainage.

(See paper of Dr. Cabell, entitled, "Report on Defective Drainage as a Cause of Disease within the Limits of the State of Virginia.")

The Chairman, as representing New York in the Section, read portions from his report on defective drainage as a cause of disease in the State of New York.

(See paper of Dr. Bell on, "Defective Drainage as a Cause of Disease in the State of New York.")

The Chairman then read the report of Dr. Robert D. Murray, Surgeon U. S. Marine Hospital, on the Medico-topographical Condition of Key West, Florida, with special reference to consumption. (See paper of Dr. Murray.)

Dr. BELL, of New York, elucidated his views on the malarial influences arising from the non-absorption of surface water in heavy clay soils.

Dr. KEDZIE explained the peculiarities of the clay soils of Michigan and their modes of drainage, both natural and artificial.

Dr. FOSTER PRATT, of Michigan, gave facts regarding underdrainage, as discovered by the digging of wells in and about his locality (Kalamazoo). From such observations the deduction was made that a considerable percentage of disease was due to the percolation into the wells of surface water, and the natural accumulations of a large town.

Dr. E. W. GRAY, of Illinois, inquired of Dr. Pratt the prevailing types of disease in Kalamazoo.

Dr. PRATT answered that fifty per cent. of them were malarial or typhoid.

Dr. H. A. JOHNSON, of Illinois, recited the physical and topographical features of Chicago, which rested, he said, upon a bed of alluvial clay descending toward the lake, and covered with sand of gradually diminishing depths from the shores of the lake westward. When he first went there the diseases were of the distinctive malarial type, which the doctor remembered in his boyhood days as being common about Lapeer and Macomb Counties in Michigan. Something like twenty-five years ago, all the surroundings of Chicago were regarded as swampy, and the water-shed was so low that boatmen passed from the head of the Chicago River to the head of the Desplaines with a portage of but twenty-five miles. Since that time a good system of sewers had

been inaugurated, and with such remarkable hygienic effects that a case of fever and ague was now very rare.

There was probably no city in the world of a like population which covered so large a territory as Chicago, and, as refreshing breezes were constantly blowing either from the lake or the prairies, and an abundance of excellent fresh water obtained by a tunnel into the lake, the health of the place had greatly improved, and some of the more distinctively malarial diseases had disappeared entirely, a fact greatly due to the drainage of the surrounding country. Cerebro-spinal meningitis and congestive chills were rare and exceptional diseases. The conclusions reached were that not one-tenth of the cases now were of the malarial type common twenty-four years ago. Deaths by consumption were about in the same proportion to the whole number of deaths, and there had been an increase in zymotic and typhoidal diseases.

Further remarks were made by Drs. B. H. CATLIN, of Connecticut; JOHNSON, of Illinois; KEDZIE, of Michigan; GRAY, of Illinois; and JONES, of Ohio; in which the general deductions were summed up from the facts presented that drainage, the purification of the soil and atmosphere, were not only important, but in the highest degree essential to the continued health of communities.

On motion the Section adjourned.

JUNE 4th.

The Section met at 2.30 P. M., the Chairman, Dr. BELL, presiding, and Dr. FRANKLIN STAPLES, Secretary.

The Chairman announced as the special order the resolutions on Intemperance, offered by Dr. FREDERIC HORNER at the last meeting of the Association, and referred to this Section.

On motion, voted that the special order be temporarily suspended for the transaction of other business.

On motion of Dr. R. C. KEDZIE, the Chairman's address, with other papers, were referred to the Secretary to be prepared for publication. The Chairman asked that he might be allowed to publish his address in his own journal, the *Sanitarian*. There was no objection, but, on the contrary, several members heartily approved of the proposal. It has been the practice of the Association to consider all papers read before it as private property, and the writer has no right to publish them except as authorized by the Association, but it was the sense of the Section

that the subject of public hygiene was of such an exceptional character as to warrant as wide publicity as possible.

Dr. KEDZIE then moved the following resolution, which was adopted:—

Resolved, That a committee of three be appointed by the Chair on the subject of the ventilation of dwellings, school-houses, and other public buildings, to report to this Section at the next annual meeting of the Association.

Under this resolution the Chair appointed Drs. R. C. KEDZIE, of Michigan; A. B. STUART, of Minnesota; and R. J. O'SULLIVAN, of New York; as the Committee.

Dr. H. B. BAKER, of Michigan, offered the following resolution, which was adopted:—

Resolved, That a committee of three be appointed by the Chairman of this Section to prepare a form for a bill to establish a National Department of Public Health at Washington, and to report at the next annual meeting of this Section.

The Committee was appointed by the Chair as follows: Drs. H. B. BAKER, of Michigan; H. A. JOHNSON, of Illinois; J. M. TONER, of Washington.

Dr. FOSTER PRATT, of Michigan, offered the following resolution:—

Resolved, That a committee of three be appointed by the Chairman of the Section, to report at its next annual session, what legislative action, if any, can be taken to enforce, by law, an examination of all persons who enter upon the practice of medicine and surgery, by a State board of medical examiners.

The resolution was adopted, and the Committee appointed as follows: Drs. FOSTER PRATT, of Michigan; S. G. ARMOR, of New York; D. W. YANDELL, of Kentucky.

The regular order of business was then taken up, viz., the consideration of the resolutions of Dr. HORNER. (See resolutions above in circular of Chairman.)

After discussion, opened by Dr. HITCHCOCK, of Michigan, and participated in by Drs. MORRIS and HOWARD, of Maryland, COCHRAN, of Alabama, and KEDZIE, of Michigan, the resolutions were voted on *seriatim* and severally adopted; after which, on motion, they were adopted as a whole.

The minutes of the Section were read and approved, and the Section adjourned.

FRANKLIN STAPLES,
Secretary pro tem.

THE WASTE OF LIFE.

ADDRESS

DELIVERED BEFORE

THE AMERICAN MEDICAL ASSOCIATION, AT DETROIT, JUNE 4, 1874.

By A. N. BELL, M.D.,

CHAIRMAN OF THE SECTION ON STATE MEDICINE AND PUBLIC HYGIENE.

"It is held in law that whoever accelerates death causes it."—*Taylor's Medical Jurisprudence*, Am. ed., 1861, p. 470.

PROGRESS in measures for the protection of human life consists in exposing the consequences of their neglect. The fall of a frail structure in Brooklyn a few weeks ago, overwhelming nine or ten men in the ruin, killing three outright, and wounding several others, shocked the whole community. Policemen and coroners rushed to the rescue; his Honor the Mayor, the Health Commissioners, the contractors, and the undertakers vied with one another in their lively sense of the catastrophe. And the action of the Common Council was invoked to prevent the recurrence of such an accident in the future. Such is the natural horror of death when suddenly brought face to face with small motives. Three days later, in the same city, a whole row of half-built houses tumbled down, involving much greater loss to the contractor than in the former case, but as there happened to be nobody in them at the time to be killed, the circumstance attracted but little notice; it was only an unfortunate accident to the contractor—an incident to his occupation. These are fair examples of common occurrences of carelessness in regard to the safety of human life throughout the country. Occasionally one, extraordinary for the number of its victims, happens, such as that of the Mill River disaster, and it is for a time made the theme of pulpit eloquence. Mill-dams everywhere are held up as suspicious structures, liable at any time to break away, and demon-

strate, to the satisfaction of those who build them, the uncertainty of human life.

It is the same when lengthened steamships founder amid ocean, as in the recent disasters of the French line; or when boilers burst, as in the ferryboat Westfield; or when railroad trains dash headlong to fatal collision, and over embankments. Public indignation is for a time excited. Investigations are undertaken, and lengthy publications of that which everybody knew before, that in the construction of such works the protection of human life has received little or no consideration whatever; that the necessity for it has not been imposed as an obligation of the civil authority, nor adequate punishment for its neglect inflicted. But these after all are only the minor degrees of crime in this direction. The danger of imperfect structures to human life is pervading. Palatial dwelling-houses are not unfrequently erected over old burying places, vaults, and cesspools, and within provided with all possible accessories for the retention of the poisonous gases evolved from the soil, in addition to the foul air generated by their occupants. Assembly rooms and theatres are usually no better. And exquisitely finished churches, where mill-dams and other death-dealing agencies are made odious, are not uncommonly constructed with so little regard to ventilation as to be dangerous sources of disease. Country dwelling-houses, with beautiful exterior relations of shade trees and verdure, but with neglected graveyard proximities and other death streams beneath and around, with privy vaults, cesspools, and wells all in proximity, are the common nests of typhoid fever all over the country. The indispensable requisites to health—an abundant supply of pure air and pure water—receive but little recognition, and are rarely provided for.

School-houses, public and private, are a disgrace to human nature. Situated, constructed, and furnished with utter disregard of the nature of the soil, exposure, air, and light, they are in effect systematic institutions appropriated to the nurture of disease and the acceleration of death. With reading lessons recounting the horrible act of the half-civilized nabob of Calcutta more than a century ago, and the no less barbarous act of the captain of the emigrant steamship Londonderry twenty-five years ago, and school physiologies teaching that each individual requires for healthy respiration 2000 cubic feet of air hourly, notwithstanding these instances and this patent knowledge, examples are not wanting

in the public schools of our large cities where the air-space appropriated to each individual is less than fifty cubic feet, and with little or no provision for change: literally, schools for the growth, culture, and promotion of scrofula and consumption, and the hurdling places of the infections of childhood. Three hundred cubic feet of air-space, with efficient provision for change three times an hour, is the lowest possible estimate which should be allowed. With less than this, the air speedily becomes poisonous, and the active nidus of infection.

Tenement-houses are notoriously situated without regard to external relations of soil, air, and light; and within, from subcellar to garret, curious for their ingenuity as architectural imitations of the bee for space, but wholly devoid of that insect's instinct in regard to cleanliness and ventilation. And, abundant as the city water supply usually is, it is, notwithstanding, supplied in stinted measure to those who most stand in need of it—the poor. The labor of travelling the rickety stairways of tenement-houses to a common "standcock" in the lower halls, involves uncleanliness and ill health in a variety of ways. Equivocal vegetables and meats from the most unsavory stalls are scantily washed and improperly cooked. Numerous instalments of clothes are washed in unrenewed water, and the same at the last, is used for bathing the person, scrubbing the floors and stairways. Hence, the tenement-house odors which cling so tenaciously to the clothing and persons, as well as to the rooms of the "great unwashed." As a rule, tenement-houses are laboratories of poison throughout, and in all their relations to society. Numerous descriptions of them exist in the literature of New York, and possibly some persons may think they are things of the past. But, unfortunately for sanitary science, and to the disgrace of humanity, they are still of the present, and exist in other large cities besides New York. The raid of the sanitary police in New York last year, in view of the expected cholera, discovered thousands of people actually living in holes in the ground, a dozen or more in a huddle, in holes nine or ten feet square, swarming with vermin and rotting with disease. No less than 20,000 of these *troglodytes*, living like moles and bats in the dark, poisoning the atmosphere around, and sucking the life-blood of the people! In the tenement-houses of New York there are many single rooms occupied by from ten to fifteen persons of both sexes, and frequently by several families. There

are structures from four to six stories high, divided into hundreds of rooms, crowded with men, women, and children, smothering for the want of fresh air, and in dirt and foul odors horrible to contemplate. And there are, not uncommonly, rear buildings to such as these, adding to the stifling condition of the yards, which, with the gutters, are the common filth receptacles for the out-throwings, and the wallowing places of the children; the streets, as filthy as the gutters, for the young girls, and rumholes at every corner for the parents. And these tenement-houses are the homes of more than half of the children of New York! In them is carried on the perennial "slaughter of the innocents," of more than two years old and under, in comparison with which the crime of Herod sinks into insignificance!

Such surroundings obtund and destroy human sensibilities. The occupants of such dwelling-places become an easy prey to the sensual excitements of alcohol and other debasing agencies and influences. As people become accustomed to dirt, they cease to recognize its presence and to exert themselves to avoid it; there is no limit to the downward tendency. The same broad road to disease and death is the highway to moral degradation. And that such an institution should breed disease and death; that it should be the hecatomb of children; that it should sustain liquor stalls by the thousand, and supply the ghastly gayety which flaunts beneath the gaslight and makes night hideous; that it should send the boys who escape the slaughter to State prison; that the tenement-house should do all these things, and more than words can utter, is perfectly consistent with its appointments. And yet, to repeat, more than half the children of New York are born in tenement-houses—and New York is called a Christian city! Is the tenement-house a Christian institution or a heathenish? Who is responsible? Is there, indeed, *no* responsibility for moral and physical degradation; *no* responsibility for deliberate provision and business speculation in human life; *no* responsibility because tenement-house property pays better than any other real estate? State Medicine and Public Hygiene! The lesson is yet to be taught in this country that man has no right to poison his neighbor; that to poison the air for his neighbor to breathe is no less criminal than to poison his food or drink; that to smother children in schools and tenement-houses, as in other places, is infanticide; that to accelerate the death of any individual is to cause it, and that the crime is homicide.

Savage nations generally practise the belief that there is an advantage in removing that portion of every population which is unable to provide self-subsistence; hence they openly put to death infants, and those who are bowed down with the infirmities of age. The same error prevails among a large class in civilized communities, and those who entertain it argue for a compensating advantage in the removal of a worthless portion of surplus population. But this is an exceedingly superficial view. It is not the surplus, but the valuable portion of life thus thrown away. To whatever extent the duration of life is diminished by noxious agencies, so much productive power is lost, and every community is poor and powerless in the inverse ratio to the average duration of human life. Every death under the age of fifteen years carries with it a positive loss to the community in which the individual has lived, because previous to this age sustenance involves cost—a direct outlay—whilst if the individual is preserved, a productive member of society is added and remuneration rendered. If the probabilities of life in any community are so low as to make the average adult age young, the proportion of widowhood and orphanage is necessarily increased, and the productive members of society proportionately burdened. If a husband dies in the early years of his married life, he leaves as burdens on the world a widow or children, for whom, in all probability, if he had lived, he would have labored. And thus it is that burdens are created and costs entailed upon the industrious survivors of every community, in direct ratio with a high mortality. The pecuniary costs, therefore, of pernicious influences may be measured by the charges attendant on the duration of life, and the reduction of the period of working ability, and the cost will also include much of the attendant vice and crime, as well as the destitution which comes within the province of pauper support.

These truths tally strangely with the ordinary comprehension of our legislators and boards of education, when approached on the subject of measures for the protection of human life. Their philosophy seems to run thus: Every death is a matter of pain and suffering to the immediate circle of the deceased, and is a thing which those more immediately concerned should use every effort to avert, yet it is an undoubted benefit to the community since there is one less consumer of the common stock of public possessions. They seem not to consider that those who die cease

to produce, or have not been preserved until the productive period, as well as cease to *consume.* Had Fulton died in his infancy, or Morse before his great invention, the world might long have remained ignorant of the loss sustained by a premature death. Indeed, premature deaths cut right into the centre of commercial prosperity. Early deaths presuppose sickly, feeble lives, at all times incapable of vigorous exertion, and frequently interrupted by periods of disability. The man whose life has not exceeded forty years has had many periods of inability and sickness before its close; and, as a general rule, the short-lived have more years of inability and uselessness than the long-lived, for among healthy men we observe individuals engaged in, and even undertaking great labors in comparative old age. Among such the most prominent merchants and railroad managers of the United States are living examples.

At the outset of my duties as chairman of the Section on State Medicine and Public Hygiene, it became evident to me that any special effort of the Section for the speedy application of the sense of the Association as embodied in the resolutions favoring the establishment of a National Sanitary Bureau, before State Boards of Health become the rule instead of the exception, would be premature, if not, indeed, wholly wasted; or, possibly worse, fraught with success encumbered by political conditions more calculated to hinder than to promote sanitary science. That the labors of the Section might not, therefore, be uselessly spent, I prepared and sent to every member thereof, a circular, calling attention first to the resolutions committed to the Section, and second to *Defective Drainage.*

It is presumed that all intelligent persons are more or less familiar with facts and illustrations demonstrating the utility of, and the necessity for, drainage as a life-saving measure.

The mortality of the United States for 1870 was 492,263. A glance at this tabulated estimate in the census report will show that about one-half of the total number of deaths were caused by the diseases due for the most part to miasms consequent upon soil saturation and stagnant water. That from consumption alone there were 69,896 deaths. From enteric, intermittent, remittent, and typho-malarial fevers, and cerebro-spinal meningitis, there were 34,521 deaths. Rheumatism, acute pulmonary affections, croup, diphtheria, and many other diseases well known to be largely due to or promoted by the same cause, may, for our pre-

sent purpose, be left out of the count. Of the 69,896 deaths from consumption, and 34,521 deaths from ordinary miasms, three-quarters of them, at the least, or more than 75,000 lives, might have been saved by drainage. For illustrations of the results of defective drainage, it is more difficult to go amiss than to designate. For its consideration in detail in some of the States, attention is invited to the special reports submitted by the members of the Section representing them.

Since writing up the subject for the city of Brooklyn and county of Kings, for the report on the State of New York, Dr. James Watt, Registrar of Vital Statistics to the Brooklyn Board of Health, has kindly prepared for me a table showing the comparative mortality from consumption in the different wards of the city. Its full value to Brooklyn can be appreciated by those only who are familiar with the city topography, while it illustrates conditions common to all of our large cities.

Take, for example, an old and well-built up ward (the third), containing a population of 9984, which is not known to have any soil saturation, its situation being such that the ordinary street grading and sewer culverts effectually drain it. The deaths from consumption in this ward last year were fourteen; or, 1.40 per 1000 of the population. An adjoining ward (the sixth), with a population of 28,296, of corresponding large area, however, it being even less densely built up than the former, but about one-half of it subject to soil saturation, had of deaths from consumption, 171, 6.04 per 1000 of population. Sixty-one of these deaths occurred in hospitals situated in this ward, and were in part from other wards. But after deducting the whole sixty-one, there still remain 4 per 1000, or nearly three times as many deaths per 1000 of population from consumption over this area of soil saturation as in the one devoid of it.

Of malarious and zymotic diseases generally, the deaths over the non-saturated soil (of the third ward) were 2.40 per 1000 of population. From the same diseases in two soil-saturated wards (twelfth and eighteenth) extending over a large area, and for the most part sparsely built up as compared with the non-saturated area, there were 9.86 per 1000 of population, or nearly four times as many. I might thus go over the whole city and show the influence of soil saturation on the mortality; point out the neglected natural soil saturation in one place, and the carelessly constructed soil saturation in another.

The total number of deaths in Brooklyn last year was 10,968, and not less than one-fourth of them were accelerated by defective drainage. And yet Brooklyn is no exception in this regard. On the contrary, the death-rate of Brooklyn compares favorably with other of our large cities, which is abundantly shown by the following examples: The total annual death-rate of Brooklyn from consumption last year was 3.47 per 1000 of population (Census of 1870), and on the whole number of deaths the per cent. for consumption was 12.55. In the city of New York, on an estimated population at the present of 1,000,000, there are of deaths from consumption 4.13 per 1000 and 14.22 per cent. of the total mortality. Boston, 3.96 per 1000 of population; 13.84 per cent. of total mortality. Philadelphia, 3.05 per 1000 of population, 13.65 per cent. of total mortality. San Francisco, 2.74 per 1000 of population; 14.12 per cent. of total mortality. Albany, 3.43 per 1000 of population; 15.50 per cent. of mortality. New Orleans (where the benefits of a mild climate opposed to consumption are condoned by defective drainage), 3.96 per 1000 of population; 13.84 per cent. of total mortality. By States—of the total mortality in the United States, 12.45 was caused by consumption; in New York, 16.17; District of Columbia, 21.19. A concise table of the ratio of the deaths from consumption in every State in the Union may be found in the "Dictionary of Elevations and Climatic Register," by Dr. J. M. Toner. Under approximate temperatures the ratio of mortality from consumption in regard to defective drainage will be found scarcely less deviating than miasmatic fevers.

Wherever misery, disease, and short life predominate, there always exist at man's disposal the means of relief; to find out and apply these means is the exercise of sanitary science.

It becomes our duty as sanitarians to show the authorities that it costs less money to have human habitations constructed with regard to the protection of life, with provision for an abundant supply of pure air, water, and light; paved, and cleanly streets; efficient drains and sewers—than it does to neglect these provisions; that imperfectly constructed houses, mill-dams, steamships, and other human habitations and highways, all fall under the category of neglected measures, accelerating death.

It is not the nature of man that evils at war with his well-being should he scattered broadcast, or exist anywhere within the scope of intellectual development. Selfishness and barbarism are

noxious agents everywhere, and as such they should be treated, for it is neither the nature nor the habit of the human constitution to become so accustomed to conditions inconsistent with the highest state of human progress as to be unaffected by them. The highest state of human culture furnishes the only standard by which the degree of elevation should be measured; and cleanliness and refinement bear the same relation to each other in the progress of human culture as do filth and moral uncleanliness in the degradation of uncivilized communities. The miserable, degraded, and sickly portion of every community is weak, in proportion as the highly-cultivated and healthy portion is strong. To assist the weak in applying such measures for the preservation of life as will protect mankind at large from the injuries which each individual in a narrow-minded selfishness would inflict on his neighbor, is the first and most sacred duty of a paternal government. Contact with well-cleansed streets, and external purity generally, creates a distaste for internal filth and degradation, and there are none so degraded or so impure as not to be benefited and elevated by association with kindness and cleanliness.

It is sometimes remarked by superficial observers that the luxuries of the rich and the miseries of the poor equalize the scale of human happiness by being alike deleterious to health. If we examine into the facts of the case, and ascertain how very small the proportion of deaths is from actual poverty, in this country especially, as compared with the number of deaths from other and preventable causes, and apply the same information to country populations where the proportion of the poor is greater but healthier, we shall find in this circumstance abundant evidence of other causes than poverty to account for the excess of mortality.

The worst effect of poverty is that it commonly leads to neglect and filth, and this constitutes an insalubrity which extends to the whole neighborhood. Where large masses of people are congregated together, as in certain quarters of most large cities, it is necessary, in default of systematic State organizations, to have special laws and local regulations. But these are usually efforts to adapt sanitary administration to intolerable conditions; they are ordinarily complicated, expensive, and at times exceedingly harassing. They are established, and their administration undertaken, under the urgency of pressing contemporaneous necessity,

subject to the changes of political subserviency. Hence there is a want of co-operative effort—a want of comprehensive executive skill sufficient to control and adjust local interests and prejudices to the demands of public good on the one side, and a want of recognized right and willing acquiescence on the other. Government is unequally administered. Some streets are cleaned and others not; some places are drained, and others more in need of it are left to eke out their poisons. In some instances, street impurities and filth are conveyed from one neighborhood—rich and selfish, perhaps—and deposited in another. They are, for the most part, mere personal regulations, which are always difficult of application and often wholly impracticable for the promotion of health. And they are especially so when recognized as being mere temporary expedients, with no fixed principles. They touch human pride, undermine self-respect, put an end to self-direction, and inspire reckless indifference and opposition. Such personal regulations are, in short, inconsistent with independence and manliness which kindly and paternal culture in every aspect of humanity inculcates and encourages. In all partial and local operations which are not subject to respected authority and fixed care for the public welfare, there must continue to be a waste of effort and of execution; which are not only losses in themselves, but they serve to impede every effort towards general and permanent sanitary improvement by disgusting people with the expense and difficulty attending it.

Efficient and economical sanitary administration depends upon the dignity, qualifications, powers, and responsibilities of the officers who are appointed to execute it. These conditions can be secured in no other way than by legislative action based upon an enlightened comprehension of the economy of human life and the establishment of paternal State authority for its conservation.

Deaths from Consumption in the City of Brooklyn during the Year 1873.

Wards.	Population, 1870.	Total No. of deaths.	Deaths from Consumption.	Per cent. per 1000 of population.	Per cent. on total death rate.	Totals.		U. S.		Foreign.		Under 5 yrs.		5 to 15.		15 to 25.		25 to 40.		40 to 60.		60 to 80.		80 to 100.		Deaths in hospitals.
						Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
1	6,476	130	10	1.54	7.69	7	3	2	2	5	1	...	...	...	...	2	1	2	1	2	1	1	...	...	...	...
2	9,117	223	22	2.41	9.86	9	13	2	7	7	6	...	...	...	2	2	4	4	3	3	3	...	1	...	...	...
3	9,984	136	14	1.40	10.37	7	7	4	4	3	3	1	...	...	...	2	1	3	2	...	1	1	2	...	1	...
4	12,087	237	35	2.89	14.76	16	19	8	10	8	9	...	...	...	1	2	3	7	7	7	6	...	2	...	...	...
5	20,490	519	68	3.31	13.01	38	30	12	10	26	20	2	...	...	1	4	6	18	10	12	10	2	3	...	...	...
6	28,296	934	171	6.04	18.34	91	80	31	23	60	57	5	...	2	4	16	13	40	40	21	19	7	4	...	...	61
7	22,312	509	65	2.91	12.57	34	31	14	17	20	14	1	1	1	1	8	4	7	16	11	8	5	1	1	...	...
8	9,592	344	39	4.06	11.30	20	19	10	5	10	14	1	1	1	2	3	4	4	6	7	4	4	2	...	...	...
9	15,279	443	72	4.71	16.21	36	36	11	17	25	19	5	3	3	1	5	6	10	17	11	8	2	1	...	...	...
10	34,592	772	105	3.03	13.60	55	50	26	18	29	32	2	1	2	1	12	17	20	22	18	7	1	2	...	...	...
11	21,243	489	71	3.34	14.70	40	31	16	21	24	10	2	1	1	1	6	7	19	14	11	8	1	...	...	...	11
12	18,302	592	64	3.50	10.81	32	32	6	7	26	25	2	2	...	2	4	8	13	11	13	9	...	...	...	...	...
13	18,711	407	40	2.13	9.82	24	16	20	14	4	2	1	...	...	...	6	3	7	7	8	5	1	1	1	...	...
14	20,649	629	80	3.88	12.71	35	45	15	18	20	27	2	...	1	...	4	12	16	15	8	12	4	5	...	1	...
15	18,406	431	65	3.55	15.08	36	29	20	18	16	11	1	...	2	...	5	5	12	13	13	9	3	2	...	...	...
16	26,438	1,155	135	5.10	11.68	77	58	27	25	50	33	8	8	4	3	17	15	19	19	24	11	5	2	...	...	...
17	17,353	526	43	2.47	8.17	24	19	11	7	13	12	...	...	...	...	3	3	12	8	6	7	3	1	...	...	...
18	11,607	446	59	5.08	13.22	30	29	12	10	18	19	...	...	2	...	6	7	10	9	8	7	4	5	...	1	19
19	16,321	444	45	2.75	10.13	17	28	10	15	7	13	1	2	...	...	5	5	6	9	3	10	2	1	...	1	...
20	19,179	365	44	2.29	12.09	20	24	15	17	5	7	1	1	...	...	5	6	8	8	2	5	4	4	...	...	2
21	27,904	886	92	3.29	10.39	53	39	29	23	24	16	6	3	1	2	8	9	18	16	16	9	3	...	1	...	...
22	11,761	351	37	3.14	10.33	25	12	16	5	9	7	1	...	1	2	8	7	6	1	7	2	1	...	1	...	...
Totals.	396,099	10,968	1,376	3.47	12.55	726	650	317	293	409	357	42	23	21	23	133	146	261	254	211	161	54	39	4	4	93

Tabular Statement showing the number of deaths from consumption in each ward, the percentage of deaths to the 1000 of the population, the percentage on the total death-rate, and the total death-rate from all causes, including the deaths in hospitals.

STATE MEDICINE AND PUBLIC HYGIENE IN ARKANSAS.

By D. A. LINTHICUM, M.D.

The term "State Medicine," as is well understood, is used in two acceptations. In its narrower signification of merely forensic, or legal medicine, State medicine possesses everywhere, of course, a uniform, reflected importance, from its relations to the subject of evidence in criminal causes. In that broader sense, which includes not alone medical jurisprudence, forensic, or legal medicine, but medical police, and, perhaps, still other branches; its correlative relations are probably less extended, in any of the States of this Union, than in certain European countries.

In Arkansas, the ordinary rules governing the matter of medical evidence are not, so far as we are aware, in any manner modified, either by statutory enactment, or judicial decision; nor does the existence of any medical college, or university, call for the exercise of legislation respecting its interests.

Authorization of Dissection.—The medical profession, and the cause of science in our State, are to be congratulated upon the fact that the recent Legislature of 1873 passed an act legalizing dissection. The act provides that any member of either of the following boards of officers, to wit: the board of health of any city, village, or township; the mayor or common council of any city; and the officer or board having direction or control of any almshouse, prison, house of correction, or jail, shall, when requested, surrender the dead bodies of such persons, as may be required to be buried at the public expense, to any regular practising physician in the State, to be used by him for the advancement of anatomical science, and for no other purpose; the remains after being so used to be decently buried. But no such body shall be surrendered if the deceased, during the last illness, requested burial; or if, within twenty-four hours after

the death, any person claiming to be of kindred, or to be a friend of the deceased, and satisfying the proper board of officers thereof, shall require to have the body buried; or if the deceased was a stranger, who died suddenly, before making himself known. In all such cases the dead body is to be buried. Any regular practising physician, or any medical student under the authority of such physician or surgeon, may have in his possession human dead bodies, or parts thereof, lawfully obtained, for the purpose of anatomical inquiry.

There is, however, a lingering popular prejudice against even the most carefully guarded dissection law, as is evidenced by the fact that the bill in question was pocketed by our Governor, and retained without signature, so that it only became a law by constitutional enactment; he fearing to stem the tide of public prejudice by signing the bill, and returning it to the Legislature.

The offence of violating the grave, whether successfully or otherwise, or the purchase or receipt of the dead body of any human being, the purchaser or receiver knowing such body to have been disinterred, contrary to law, was already, by an act of 1869, punishable by fine, in any sum not less than one hundred dollars, and imprisonment in the county jail for a period not less than six months. The act specially excepted the case of the bodies of persons executed under the criminal laws of the State. Probably, since the passage of the act of 1873, the disinterment of such bodies, after dissent expressed by the criminal or his friends, would be punishable simply as a common law offence; not under the statute of 1869.

However, the questions may be open to too grave a doubt to render the experiment, if attempted, a safe one, with the prejudice that still lingers in the minds of the unenlightened people against what they regard as great profanity and barbarity.

Legislation for Medical Education.—Our statute book exhibits upon its pages no enactment establishing any standard of medical education; or (unless so far as may pertain to the appointment, duties, or compensation of physicians to one or another public institution) in any manner referring to the regulation of medical practice. There is not so much as a single clause rendering it incumbent upon him who would practise medicine to pursue diligently his studies for three years, or for any specified time whatever, the study of the art and its co-ordinate branches; to have attended any course of medical lectures

at a recognized medical college or university, or to have become a graduate of such an institution.

There being no statute expressly regulating the standard of medical acquirements, there can be no penalties attached to the abuse, however criminal, of potent remedies, in ignorant and unskilful hands. We have no law in this State to protect the people from empirics, charlatans, and mountebanks, and ignorant pretenders to the medical art. Our State, as a glance at the map will indicate, is among the largest in the Union. Its territory is extremely varied in character. It is very sparsely populated, and possesses few cities or villages of any special importance. Little Rock, the capital of the State, is our largest city, and yet its population, including its immediate surroundings, will not exceed twenty thousand persons. Helena, the next most important city in the State, by reason of its geographical position and peculiar location, being at the foot of Crowley's Ridge—a somewhat elevated but rugged back-bone of a mountain, running from Cape Girardeau, in Missouri, to this place, where it terminates, a distance of over three hundred miles, and presents the only high land on the south bank of the river, from the cape to Natchez, in Louisiana, offering a safe retreat from the annual high tide that the bottoms are subjected to—its population does not exceed six thousand. In common with other States, we have quite an army of persons called "doctors." These are of all grades and shades, from the regularly educated physician to the man who, gaining a smattering of the names of a few articles of the materia medica in common use, purchases a pair of medical saddle-bags, and at once plunges into practice in some remote corner of the State. Thus we have a medley of "doctors" constantly jostling each other, and being jostled by one another; and who for their sustenance prey upon the credulity and misfortunes of the people.

Unfortunately, the roll of our educated physicians is not large, and these are chiefly confined to the larger cities and villages; and yet, considering the obstacles offered to the determined and resolute practice of an exigent profession, by the comparative poverty and social condition of a border State, and the scanty encouragement to such practice by our defective legislation, it can only be a matter of surprise that Arkansas does present so many, who, in professional ability and earnest devotion to the art, are entitled to bear with honor the name of *true physician.*

The majority of our people are well-meaning planters, of a rudimentary education, and a very limited knowledge of the principles upon which medicine is based. It is, therefore, difficult for them to discriminate between the educated and the uneducated physician; and as the latter is usually hail-fellow well met, he enjoys the greater popularity, and frequently has the larger and more remunerative practice.

These men enjoy the euphonious title of "Doctor," many of them possessing no medical library (except perhaps an old work on practice, and some old materia medica, printed A.D. seventeen hundred and one, obtained probably from some auction sale), or instruments, except probably an old thumb lancet.

These characters never heard of Bell, Yandell, Gaillard, Hays, Davis, and the host of other shining and intellectual lights, whose names adorn the pages of our medical literature, who are daily distributing the gems of a rapidly progressive science to its thinking and reasoning votaries throughout our extensive domain, thereby giving the medical profession of America, as exponents and teachers of that peculiar art, a position *at least* unsurpassed by any people, under the broad blue canopy of heaven. If by any means a gratuitous copy of one of these journals should find its way to them, they would at once declare it a humbug, and consign it to the rubbish unread, because of their inability to comprehend it. These very men, ex-cathedra, however, are not without considerable influence, politically and otherwise, in their respective communities. There is another class of "Doctors" in Arkansas as elsewhere, who have had an opportunity of obtaining a far better rudimentary medical education, and who have attended a course of medical lectures, but who, from indolence, taste, or habits, have never advanced another step in their profession, even by dint of observation in their practice. These men make up for their medical deficiency by their punctilious manners; they ply the *suaviter in modo* to perfection; free and easy of speech, their self-patronizing air imposes conviction of professional skill. These men are the opprobrium of the science of medicine; strengthened, as is frequently the case, by wealth and social position, they wield a powerful influence, adverse to the advancement of medical science throughout our State. The evil these men perpetrate, the wrecks of physical constitutions they cause, and the number of deaths that they perhaps unconsciously hasten, God only knows. "The grave covers their ignorance,

hides from view their work of destruction, and *dead men tell no tales.*"

This is not a pleasant picture to gaze upon, but it presents, nevertheless, a reality, and is in no manner overdrawn. It is a state of things which, however disagreeable to contemplate, demands our investigation, that a remedy may be suggested, and concert of action to that end obtained. The subject of State medicine in Arkansas, then, presents certainly two vital questions: 1st. The establishing a standard of medical education, and the qualification for the enlightened and successful practice of medicine and its branches; 2d. The protection of the people from the imposition of all ignorant pretenders to the healing art. To accomplish these ends, no complex machinery of legislative enactment is necessary; nor do we wish a board of examiners, to license such physicians as they may deem qualified, for there again abuses would inevitably through political means creep in, for the very men in question, and who usually constitute one-half of the members of our General Assembly, would be certain to defeat the passage of such a law, or, should they approve it, would be very certain themselves to constitute the board of examiners. We wish to begin with a plain, simple, yet effective statute, of a type similar to that of the medical laws lately enacted in Prussia. Such a statute should provide that no person shall be legally acknowledged as a physician in Arkansas, or recognized by the profession as such, unless he shall have graduated at some recognized college or university in good standing with the American Medical Association. Any other person desiring to practise medicine should, as we submit, be permitted to do so, but under the following restrictions, viz.:—

1st. He cannot place his name upon a sign, or upon a doorplate, as a doctor.

2d. That he cannot collect his fees by process of law.

3d. That he cannot give professional evidence before any court or legal tribunal. Any violation of these restrictions should subject the person so offending to all the pains and penalties imposed by our statute against perjury. Such a law would, we are convinced, properly executed, prove to be the commencement of a new era, and a healthy revolution, and give a fresh impetus to the advance of medical science throughout the State, inducing a spirit of emulation and pride within the bosoms of a large percentage of those already engaged in the practice of the profession,

and thereby, measurably at least, shielding the people from the impositions they now endure.

MEDICAL SOCIETIES.—A few of the most zealous and enterprising members of our profession in this State have been laboring very indefatigably, and not without success, for the past three years, to organize the worthy material into societies, associations, institutes, co-operative in their nature, governed by the Code of Ethics of this Association, and amenable to a general head, the Arkansas State Medical Association, which holds its meetings annually, in October, at Little Rock. A little timely sanitary legislation, to remove from our pathway some of the present insurmountable barriers to our successful scientific progress, the profession would rapidly step to the front, and occupy the honorable position in the commonwealth that it does in the older States, where it has received such legislative assistance as has sustained and strengthened it in its mission of mercy.

STATE HYGIENE.—State hygiene, or medical police, in Arkansas, has never received that consideration its importance as a precautionary measure towards the preservation of the health of the people deserves. Our Legislatures seem never to have thought upon the subject of the mitigation of disease, the removal of its causes, and the consequent prolongation of human life that would result. We have, therefore, upon our statute books no law upon this subject, and consequently no State bureau, or board of health, or any public official charged with this matter. There have been several laws enacted, designed expressly for the redemption of swamp or overflowed lands, that have resulted, indirectly, beneficially in a hygienic point of view. In several of our cities and incorporated towns, boards of health have been established by municipal ordinance, the members constituting these boards being volunteer physicians who receive no compensation for their services, and who possess no authority, other than of a suggestive or recommendatory character. These boards are called into requisition upon special occasions—when public exigency demands their services. This is generally the case when an infectious or contagious disease makes its appearance in a community, and the public mind becomes apprehensive and excited at the prospect of a prevailing epidemic. When stout hearts become faint, and iron nerves begin to quake, at the

near proximity of the *grim monster*, and death is claiming its victims upon the right hand and upon the left, the medical man becomes appreciated, and our science is besought to interpose a barrier to the funereal march.

The attention of a few physicians, in different parts of the State, has been attracted toward this subject, and their observations given before county or State medical societies. Dr. George W. Lawrence, of Hot Springs, in his very able report on the Climatology and Diseases of the State, read before our Association, canvasses very fully many of the predisposing influences to disease arising from natural conditions, indirectly approximating the history of this question. Doctor P. O. Hooper, of Little Rock, in his inaugural address before our State Association in 1871, suggested the extension of the Signal Corps of the war department all over our country, and that daily telegraphic reports of the influence of wind, temperature, rain, or other atmospheric changes upon the health of the people in different localities, be compiled and issued from the Surgeon General's Office for the benefit of physicians and the cause of science. He eulogized the great sewage system of the ancient seven-hilled city, and detailed the rapid progress of hygiene as operative in the older countries. Doctor E. R. Du Val, of Fort Smith, gives a careful exposition of the local diseases, and the circumstances favoring their development in that section of the State. Doctor R. G. Jennings, of Little Rock, read a very interesting paper upon the Sanitary Survey of that city, before the State Medical Society in 1871, enumerating very specifically the causes likely to be productive of disease in that city.

It is not presumed that our Association desires a lengthy and learned dissertation upon the subject of State Hygiene, but a practical statement of a few of the general causes exerting pernicious and poisonous effects upon human life, and the best suggestions that can be offered as a remedy that are applicable to the case in point.

Our State presents great diversity of surface; the eastern portion being that part lying immediately upon, and bounded upon the east by, that great artery of commerce, the Mississippi River, and embracing the city of Helena, the home of the writer, is termed the bottom or swamp land of the State, which is a rich alluvial soil, very productive of grasses and all kinds of grain, and particularly so of our great southern fleecy staple, but lying,

as it does, so very low and level, and having but little natural capacity for drainage, either surface or otherwise, and being naturally and often interspersed with lakes, ponds, bayous and lagoons, which hold stagnant water the whole year, under the hot rays of the sun during the months of July and August, it becomes a hot-bed for the propagation of malarial or paludal fever.

In this city we are suffering terribly for the want of the proper sewerage or drainage, and it is a great matter of amazement to those who are acquainted with the true situation, that it does not become a cauldron, boiling and seething with pestilence. Our board of health suggest remedies, as heretofore stated, but the want of co-operation upon the part of the common council has thrown all suggestions of sewerage still-born to earth. As before stated, the eastern portion lies low and level, except at the termination of some mountain ranges, irregular table elevations in the centre, and very broken and mountainous in the west. Our soil is equally as diverse. The dark sandy loam, or alluvial soil, peculiar to the east, also extends along our watercourses into the broken and mountainous region in the west, while the irregular table-lands present even greater variety, being composed of black and red clay, light-sandy loam, coarse sand and gravel, and our mountainous section of loam, sand, gravel, and rocks of variable formation. The State is covered, with the exception of a few prairies, with dense and extensive forests. It is well watered; large and navigable rivers flow southeasterly across her territory and empty into the great Mississippi. Our diseases are truly malarial in their character, the degree of intensity and malignancy depending upon local and personal circumstances. Our constitutional and local diseases seldom manifest themselves to us free from malarial taint. During a residence of eight years in this place, I have never met a pure uncomplicated case of pneumonia; it has always been accompanied by its febrile paroxysms, and remissions or intermissions, giving unmistakable evidence of malarial presence and influence. In a most malignant and fatal epidemic of cerebro-spinal meningitis, which prevailed here for more than two months, during the winter of 1871–2, a most marked malarial influence was observed in every case.

There is a most obstinate disease prevailing in Arkansas, which is met with, I believe, in all the other States (but, perhaps, in not so malignant a form as here), that directly or indirectly

proves as injurious in its effects upon the physical constitution, and is as destructive to human life, as any other class of diseases, not even excepting the malarial. This disease has a great many *soubriquets*, but will perhaps be readily recognized by the name of *alcoholism*. This disease seems to prevail generally, often epidemically, and sometimes really seems to be contagious, and even assumes periodicity; but quinine and its kindred remedies exert no influence, specific or otherwise, over its exacerbations.

We are visited at intervals with a number of contagious diseases, common elsewhere, and occasionally with those of an infectious character, with an epidemic tendency. The diseases I have enumerated, with others, constitutional and local, comprise a very large share of the ills the people of this State are afflicted with.

In conjunction with malarial influence, exerted upon the systems of our people through the medium of respiration, I am of the opinion that very much of our drinking water acts as a powerful adjuvant, the one entering the circulation through the air, by means of respiration, and the other taken up by absorption from the alimentary canal. Much of our drinking water in the swamps is very impure. Few persons outside of the towns being provided with cisterns, drink water from lakes, ponds, or other stagnant pools, or from wells sunk in the earth, either in close proximity to their mule pens or privies, or, perhaps, both, which, in the porous soil we possess, answer splendidly as reservoirs for the surrounding earth to filter its treble extracts of infection into.

Another fruitful source of disease exists in the character of food used by our people. Instead of the free use of fresh vegetables as articles of diet, the most of the inhabitants of what is termed the planting or cotton-raising portion of the State, live almost exclusively upon animal diet, and that the fattest article of pickled pork; consequently the system fails to receive the salts necessary to the formation of healthy fluids and tissues. There is nearly as much oily food used in the bottoms of Arkansas as there is among the same number of inhabitants in Lapland; and in a country, too, as productive as any the sun shines upon. There is no country where vegetables of every kind grow to greater perfection and with as little labor upon the part of the cultivator. But so unfortunately are our people absorbed

in the interests of King Cotton, that they have no time to devote to sanitary or hygienic matters.

As to a remedy for the sanitary and hygienic condition of this State, if I were to traverse the whole field of imagination in search of a remedy, none could be found so potent and so applicable here as *State legislation.* We need statutory enactment and a liberal appropriation, in order that a complete and thorough system of drainage be put in operation. To be successful and fulfil the purposes here contemplated, not only the legal and liberal patronage of the State is necessary, but the co-operative assistance of individuals is required. Private dwellings, cultivated fields, and contiguous woodlands, should be thoroughly drained.

As physicians and guardians of the health of the people, we should individually impress our farmers and other citizens with the importance of this great precautionary, sanitary, and health-preserving measure. The introduction of one species of reform usually inaugurates a second; the ice once broken, our way is clear. So if we can but once stem the tide of popular custom, and obtain one innovation, others will soon follow. Then what legislation cannot effect, the great moving spirit of moral reform will. Individual hygiene will then be taught in our free public schools, and though we may have once eaten of the tree of knowledge, we may yet be permitted to drink from the fountain of life.

STATE MEDICINE AND PUBLIC HYGIENE IN CALIFORNIA.

By T. M. LOGAN, M.D.

ABSTRACT OF REPORT BEFORE STATE MEDICAL SOCIETY.

At the outset he censured the Legislature for denying the moderate bounty hitherto granted to the important branch of medico-political science sustained by this Society. The doom of abolishment, with which the State Board of Health was threatened at the opening of the session, was the means of drawing public attention to its objects, the range of its operations, and the mode and measure of its benefits, a result compared with which nothing could have more effectually subserved its interests. The popular feeling manifested toward the Board was fully in keeping with the general favor with which the subject of public hygiene is now regarded; and, thanks to the intelligent scrutiny to which it was subjected, the State Board of Health has become more fully established than ever in the confidence and good-will of the sovereign people. After illustrating the dangers to a community from the neglect of sanitary precautions, Dr. Logan said: Let us take warning. Go into any of our interior cities and towns, and we find that anything like a thorough or carefully-through-out system of sewerage is a very rare exception to a very widespread rule. In spite of its admirable position for drainage, nothing can be more inadequate than the sewerage of our great metropolis. With an ocean supply of water at command, and provided with full instructions as to the superiority of salt water over fresh, on scientific principles, and its ready applicability, by Dr. Stout, of the State Board of Health, the Supervisors of the people's interest are still permitting a miserable modicum of the most costly fresh water in the world to be doled out, under a pretence of sluicing the imperfectly constructed sewers. It is this false economy which fills our orphan asylums, our almshouses, and hospitals. Referring to the results of the

quarantine commission in Paris ten years ago, Dr. Logan remarked there is great need of special and technical instruction in our medical colleges on public hygiene—hygiene in its relation to quarantines, in regard to the prevention of epidemics, in regard to sanitary provision for the wants of our cities, towns, and counties. The few local boards of health that are now in operation cannot, in an extensive State like ours, accomplish the great work before them; and especially they cannot if the members are burdened with the laborious duties of a medical practitioner. The large sums appropriated by the State for charitable and correctional purposes never can be properly economized until some central power like the State Board of Health shall be clothed with authority to co-ordinate the existing forces, and make them work harmoniously to a common end. Although the Board at present seems to be clad with a part of the necessary power, it is only a small part, and of that there is more in name than in fact. Dr. Logan then threw out some practical considerations relating to the questions raised. These considerations related chiefly to the elevation of the medical profession by more enlightened treatment on the part of the State, and by a higher standard of educational attainment. It was remarked that while the general educational average has advanced, that of the professions has been at a standstill. While asking the Legislature, on the one hand, to give to the people legal guarantees that proper knowledge has been acquired by the medical practitioner, let the profession, also, on the other hand, require of the schools and those who have charge of them to furnish every possible means whereby knowledge may be obtained in the fullest degree. The time has gone by when the very necessities of the people made them indifferent to the general culture of the doctor, so that there was the assurance that he knew something of medicine. Our seminaries and colleges, as well as the literary department of our University, are co-operating in educating our youth to a degree that renders it wholly unnecessary to accept the illiterate as candidates for the medical profession merely because medical knowledge *per se* is scarce. Every consideration that should influence the profession on this subject compelled them to urge a much higher degree of education on the part of all who matriculate in the medical schools. In the practical fulfilment of the proposed objects, Dr. Logan asked that a committee of three be appointed to confer with

professors of the schools of medicine and pharmacy in preparing a bill for presentation to the Legislature, and to be submitted for the approval of the Society at its next meeting. He suggested that this committee be instructed to nominate a State Board of Medical Examiners, to consist of eleven, as follows: The President of the State University (to have only a casting vote), the President of the State Medical Society, the Professor of Physiology in the State Normal School, the Professor of Chemistry in the State University, the Secretary of the State Board of Health, two Professors from each of the medical schools, one Professor from the College of Pharmacy, and the Superintendent of Public Instruction. The provisions of the bill should embody the substance of the resolution of Dr. Oatman, concerning the doctorate, lying over from the last meeting, and should constitute the above named eleven members, in accordance with the resolution of Dr. Morse, an Independent State Board of Medical Examiners, with power to confer the medical diploma of the State upon all candidates, irrespective of the school or source of instruction in which the applicant has been educated, provided he shall pass a satisfactory examination in descriptive and pathological anatomy, physiology and histology, principles and practice of surgery, organic and inorganic chemistry, principles and practice of medicine, private and public hygiene, obstetrics and diseases of women, materia medica, therapeutics, and the various branches of elementary scientific knowledge.

DEFECTIVE DRAINAGE IN WEST MERIDEN, CONNECTICUT.

By B. H. CATLIN, M.D.

Prof. L. J. Sanford reports the following case: "A lady, about a week after confinement with child, sickened with typhoid fever, and died. Doubtless the puerperal state predisposed her to what followed, but the fever was directly caused by an escape of gases from the house sewer. None of the sinks in the house were broken at the time." "Last summer I was informed of the following: Four or five members of a family living in Morristown, N. J. (I think), sickened nearly together, and soon after died. Subsequently the sewer pipe running through the cellar of the house, and two or three feet underground, was uncovered, when it was found that a section of the pipe had separated at a joint, and the ground all about had been saturated with discharges and odors. This being repaired and the surroundings cleansed, other sick members of the family regained health."

Herbor Brook, which runs through the centre of this city, was formerly ponded just below the railroad depot. Through the efforts of myself and others the dam has been removed, and the brook straightened so that there is a regularly running stream of water through the city. A large amount of filth still runs into the stream, which our system of sewerage as proposed will prevent.

Several years since, about 1866, the cutlery company having their manufactory on the Quinchia, raised the dam seven or eight feet, overflowing a large surface of meadow land, a good many acres (I cannot tell how much). The summer of 1870 was very hot and dry. The water of the pond was drawn off to carry the machinery, so as to leave many acres which had been covered with water now exposed to a hot sun. Intermittent and bilious fever soon began to appear in the village near the manufactory,

and a little later by the Saronick mill pond. Formerly this pond was drawn off every summer, and the swamp land that it covered in the winter was mowed in the summer.

At the same time the work of grading the streets of the city of Meriden was carried on pretty extensively.

The fevers which I have mentioned as appearing first near the cutlery pond, in 1870, have since extended over the city and town not only on the stream that runs from Black Pond, where the stream and the surroundings are the same as they have been from time immemorial, but on most of our hills.

Formerly these fevers did not prevail in the vicinity. Our fevers were typhus, typhoid, and spotted or cerebro-spinal meningitis.

Some two or three (perhaps more) farmers in Meriden have drained their farms in part for the purpose of improving their crops, and there are in the city a few short sewer pipes. I have no doubt that many of our diseases are caused by the want of proper drainage and sewerage.

The city authorities have caused a survey of the city to be made for the purpose of adopting a complete system of sewerage. I hope it will soon be accomplished.

Dr. Isaac G. Porter, of New London, writes, that in the town lying west of that city, there is much sickness which he is satisfied is caused by soil saturation.

Dr. Elisha B. Nye, of Middletown, reports :—

1st. To what extent are the diseases of your town due to insufficient drainage?

Certainly not less than fifty per cent. of them, probably more. That many which now terminate fatally would with proper drainage be curable, I cannot doubt.

2d. How many acres of marsh lands have you in your town?

Not less than one thousand acres.

3d. Have you intermittent diseases not attributable to marshy deposits but to soil saturation?

Although I cannot positively say that we have, still it is a fact that the portion of the town in which intermittent fever first appeared, and in which it has since more generally prevailed, is remarkable for soil saturation. This region is what is known as Newfield; a low and level tract, the soil of which is made

up largely of clay. Hence I think it fair to infer that soil saturation was an element in the development of the disease.

4th. Are there in your town places where intermittent fever has disappeared as a result of systematic drainage?

There are none, so far as I know.

5th. What system of drainage is necessary to render your town free from malarious diseases?

Bounded, as is our town to some extent, by the Connecticut River, and to a larger extent bounded or penetrated by its tributaries, we have of course a large amount of littoral marsh which is subject to inundations. While no practicable drainage might wholly prevent malarious emanations from marshes thus situated, their amount and intensity would be diminished by a judicious system of dikes. Thorough under-draining would undoubedly do as much for the remaining marsh lands in other towns.

REPORT ON THE MEDICO-TOPOGRAPHICAL CONDITION OF KEY WEST, FLORIDA.

By R. D. MURRAY, M.D.,
SURGEON U. S. M. HOSPITAL.

KEY WEST is an island of oolitic formation, situated in latitude 24° 32′ north, and longitude 81° 48′ west. The rock crops out in all the roadways and cleared places, what soil there is consisting of humus, powdered oolite, coral, and shell, in no place exceeding four inches in thickness. There are 1976 acres, one-third of which are taken up by the city and United States reservations, the remainder being wild "bush," salt ponds, and low flats.

The extreme altitude is twelve feet, from which there is an almost uniform slope to the sea, excepting localities, making a total area of about twenty acres, which are filled with water most of the time and constitute the "lagoons," which are very probably wrongly charged with producing malaria.

Mean temperature 76½°. A summer range of 14°; winter range of 20°. Average rainfall thirty-nine and twenty-two hundredths inches; rainfall varies from twenty-four to forty-six inches. Usually from two to five months of the winter and spring there is no rain excepting a chance shower. The balance of the year showers are frequent for long periods daily, but long drizzling rains are almost unknown. However hard the rain may fall, in an hour or two afterwards the ground will be dry, except the ruts and depressions in the streets, but in twenty-four hours at most, these will be dry from evaporation and absorption by the porous rock.

Average hygrometer 73.78°; ranging from 60° to 90°. The humidity is particularly noticeable on the approach of a cold wind or during a calm. Calms are unusual, not more than five to ten

days of calm occurring during the year. The prevailing winds are from east to northeast, the *hardest* winds from northwest and southwest. These latter carry clouds of dust about the town, which, being almost wholly of "grit," is productive of bronchial irritation, coryzas, asthma, etc.

The population of the island, in 1874, is 7500, and is apportioned as follows, viz.: Whites, 3850; Cubans, 2150; colored, 1500. About 2000 of the whites are *natives* of the island, or recent emigrants from the Bahama Islands. The remainder of the whites come from all parts of the world.

There are no diseases peculiar to the place. Epilepsy is, perhaps, fully up to its highest proportion. Trismus nascentium is very common among the low class of negroes and Cubans. The Cubans, being more or less depraved, refugees from their homes, in unsettled mental and social conditions, are much affected with consumption. All of them smoke to excess, and perhaps are of phthisical diatheses in their own country. The chill north winds may have a harsh effect upon them. At any rate, ninety per cent. of the deaths from consumption are from the Cuban population.

The old residents and their descendants, and the emigrants from the Bahama Island, who constitute over one-half of the whites proper, are scarcely if at all affected with consumption. The proportion of *old* people among them is surprising, and for two years I have not seen a single case of consumption among them, nor have I heard of one. I know of a couple of cases of death from acute pneumonia in the second and third month. In each case squalid poverty was the chief cause of death.

The verdict of all is "there is no consumption in Key West except among the Cubans." The majority of the people I refer to lead hard working and exposed lives. The families are poorly fed and ofttimes scarcely dressed at all except on gala days; but notwithstanding these conditions, consumption is exceedingly rare. I venture to say that there is not a case of it in a native white person in the town at the present time.

The effect of our winters upon chronic pneumonia, chronic bronchitis, asthma, rheumatism, and neuralgia is beneficial. The summers are relaxing to a great degree, but all persons who can maintain appetites do well the year round. Many live here, myself among the number, on account of freedom from bronchial difficulties experienced in the North and on the main land.

Complete statistics cannot be given yet, owing to the careless-

ness of the health officers, nor am I able to give satisfactory reasons for the exemption of the natives of the island from pulmonary consumption. Why Cubans, old and young, succumb in great numbers to the disease I will not say, but the facts are patent to the careless observer.

One thing is certain, namely, there is no *defective drainage* in Key West. The houses are all built with floors from two to six feet above the rock, which is always dry except during or for a few minutes after a shower. The great humidity makes some discomfort for consumptives, but does not appear to have any influence in producing pulmonary lesions.

The island is by no means a paradise, but as regards the above points it strikes me as worthy of attention. The extreme heat is productive of trouble in children under two years of age, and engenders fevers in unacclimated adults.

Scarlatina and measles, I am told, have never been known here. Further inquiries must be made ere I give credence to the assertion.

It is very probable that yellow fever is produced by careless sanitation. Of methods of keeping the city clean, the authorities have not the faintest idea.

DEFECTIVE DRAINAGE IN GREEN BAY TOWNSHIP, IOWA.

FORT MADISON, IOWA, April 24, 1874.

Dr. A. N. BELL, *Chairman, etc.*

DEAR SIR: I wrote you some time since with regard to the inability of gathering material for your report, because we have no public records of births and deaths. There are many places we know are healthier now than formerly.

I send a rough map of Green Bay township, Lee County, Iowa. Some years ago there was a great deal of sickness of a malarial type in this township. The Skunk River, on the north, used to overflow. The north bank being much higher than the south, it inundated Green Bay. Lost Creek brought in a large amount of water from the west, and by it spreading out over the land became lost, hence the name "*Lost.*"

So many thousands of acres of rich loamy land, as level as the top of a table, kept wet by having so much water brought in upon it, must necessarily produce an abundance of very rank vegetation. This rotting, year after year, formed a very spongy soil, holding constantly a large amount of water, thus forming a vast factory producing malaria by the wholesale for miles around. No wonder it is sickly.

By throwing up a levee preventing the Skunk River overflowing, and digging the Lost Creek Ditch, the soil is prevented from becoming so wet, and a large amount of stock being kept by the settlers, the vegetation is eaten and not allowed to decay, and the grazing cattle constantly packing the soil, its spongy character is destroyed.

By diminishing the water in the soil, the rotting vegetation and the spongy nature of the soil, there is no more malaria produced here to-day than upon the high clayey land.

Not having any public records, I cannot say how much, but know that the old settlers say so. And from my own observa-

tion I think that there is no more sickness now than in other townships around, which are high rolling land.

Would it not be well to speak of this neglect of making public records?

Railroad companies are in the habit of digging extensive ditches in low flat places for the sake of getting material to make the road-bed. Here the water stands, breeding all the evil consequences of stinking, stagnant water.

These companies ought to be prohibited from making these cesspools. If they must get the material for the road from such sources, they should be compelled to drain them, if possible; and if this cannot be done, as soon as the road is constructed they should be filled up by bringing material from the deep cuts.

I am sorry to say that this is the best I can do under the circumstances.

J. J. M. ANGEAR.

REPORT ON THE PROPOSITION FOR A NATIONAL SANITARY BUREAU, AND THE ORGANIZATION AND PRACTICAL WORKING OF THE MASSACHUSETTS STATE BOARD OF HEALTH.

By HENRY I. BOWDITCH, M.D.,

OF BOSTON.

I DO not believe that the time has yet arrived for the formation of a National Health Committee or Council. It seems to me that the best method to be pursued by the American Medical Association is to urge the formation of State Boards of Health for each State. When that is done, and *when they have been in operation a certain number of years, and have become an organic necessity* (if I may use that expression) for each State, then, and not till then, can a National Council work efficiently.

As you wish that I should give you some account of the rise and progress of the Massachusetts State Board of Health, I will endeavor in this letter to do so.

After nearly "a thirty years' war" with opposing politicians and clerks at the State House, and repeated refusals to listen to our petitions, the present Board was brought into life by the energy of an intelligent lady. Having read certain articles in the *Atlantic Monthly* in which she felt interested, and the writer having suggested the importance of such a Board, she urged her husband to bring the subject before the Legislature, then in session. Fortunately, he was the leader in the House of Representatives of the party that wished for retrenchment and economy. His advocacy of the bill for establishing the Board *on the ground of economy, because health is always more economical than disease,* carried all parties. The Board had been suggested nearly twenty years before, viz., in 1856.[1] But it was not until June 21, 1869, that the act establishing our Board was passed.

July 31, 1869, seven persons were appointed by the Governor

[1] Report of the Sanitary Commission of Massachusetts, p. 111, 1856.

to act as members of it. They were to hold office seven years, and each year the term of one of the Board was vacated. That vacancy was to be filled by the Governor or Council—or the retiring officer might be reappointed.

The Board was directed to make inquiries in regard to all matters connected with health. They were to give advice as to the localities of public institutions, and report their doings to the Legislature annually. They were to meet at least once in three months, at the State House, in Boston, or as much oftener as might be found necessary.

Finally, the Board was directed to report "the effects of intoxicating liquors, as a beverage, upon the industry, prosperity, happiness, health, and lives of the citizens."

July 31, the Board held their first meeting.

It was composed of three physicians and four laymen—viz.: a lawyer; a superintendent of one of the largest cotton mills in the State; a wholesale dealer in leather; and a literary man and historian, formerly connected with one of our largest daily papers.

This composition has been in a great degree retained; whenever a member has been compelled by circumstances to resign, an individual of the highest note in these special departments has been appointed to fill the vacancy thus made. *This addition of the city has been admirable in its influence.* It has caused our reports to be more comprehensive. The natural good sense of lay-members has greatly assisted the medical portion of the Board.

At first, we commenced tremblingly and with the fear that the opposition to the establishment would augment, and that the whole Board would be abolished. Some politicians promised that that should be done. It is time that some of us felt that, in the present state of the public mind in Europe and in America, the State, having once entered on the course, could not draw back; we were sure that if the present Board failed to meet the wishes of the politicians, the people would soon demand the establishment of another Board; because the whole spirit of modern thought tends to the *prevention* rather than the cure of disease. For this object it is, of course, necessary that all local causes of disease should be, 1st, thoroughly studied by a competent Board; and, 2d, that the results of those investigations should be laid before the public in intelligible language, and, if possible, in an

attractive dress. These two objects the Board have had constantly in view; and we are gratified to find that our reports are sought for by the citizens as interesting papers for perusal; we flatter ourselves, moreover, that we have endeavored always to have articles founded on real facts. We have endeavored to prevent our correspondents "from taxing their imagination for their facts;" and have sometimes looked at very homely things.

But our success in gaining the confidence of the Legislature has been very great. Without our desire the Legislature has given us the power to remove offensive trades, which cannot be dealt with by the local boards of health. We have a right to close up any establishment in Massachusetts, if we think, after a full hearing, usually with able legal counsel on both sides, that such establishment is inconsistent "with health, comfort, or convenience of the inhabitants." The result is that we have had frequent applications for the exercise of our powers. The courts have sustained our decisions. Our Secretary has been called upon to verify, on oath, our records; and the courts have granted injunctions without further investigation. This last year we have been brought in contact with rich firms, and they have determined to test the constitutionality of the law which gives such wide powers. It is possible these wide powers may be taken away, but meanwhile the Board has become "a power in the State," and the people believe it is for good. We are in no danger of demagogues attempting to destroy the Board.

One of the greatest triumphs, thanks to our courteous and efficient Secretary, Dr. Derby, has been the erection of a large abattoir in Brighton, whereby the nuisance of having numerous ill-kept and stinking slaughter-houses has been very materially diminished, and ere many years will be wholly overcome, and the whole of Brighton become a beautiful place for residences.

The abattoir will be forced always to be kept clean by rules laid down and enforced by the State Board of Health, under the laws of the Commonwealth.

Each year we have sent out a volume. Recently, a motion has been made in the House to reprint our first report, of which a small edition only was published. So many demands are made by citizens, who want complete sets, that this action has been inaugurated. It certainly proves that our Board has not lost favor in the eyes of the people.

It would be absurd for me to say that exactly the same method

should be pursued elsewhere. But this much I will emphatically declare, that until every State in this Union has a working Board of Health, with an able body of correspondents in all parts of the various Commonwealths, it is useless, in my opinion, to moot the question of a National Council. Let each member of the American Medical Association determine that he will do all in his power to get a Board established in his own State—and, moreover, let him be strenuous, that the Legislature, *for its own good*, must grant money for the necessary expenses of that Board. He will always find enough of interest to investigate within his own immediate territory.

Some fifteen or twenty years hence, a National Council would naturally grow from such a collection of individual boards. Any attempt to form one before, I fear, will do harm rather than good.

REPORT ON THE RESOLUTIONS, REFERRED TO THE SECTION ON STATE MEDICINE AND PUBLIC HYGIENE, ON THE USE OF ALCOHOLIC LIQUORS, AND THE ESTABLISHMENT OF A NATIONAL SANITARY BUREAU, AND THE INFLUENCE OF DRAINAGE ON PUBLIC HEALTH IN MICHIGAN.

By R. C. KEDZIE, M.D.,

OF LANSING.

In submitting my report as member of this Section, I would express my regret that I have not been able to devote more time to the subject. As member of our State Board of Health, I have had a large amount of work to do in other but correlated fields, which has abridged my work in this field.

The first resolution submitted by our chairman in regard to a National Sanitary Bureau, meets the hearty approval of the medical profession in our State. The need of such a Bureau is imperative, and the good that may be accomplished through such a Bureau is almost incalculable. The second resolution does not meet my views. I do not think it is wise or just to give it a secondary position in any Bureau or Department of the General Government.

Concerning the resolution offered by Dr. Horner, I have little to offer. Dr. Hitchcock, President of our State Board of Health, is preparing an extended paper on the "Entailments of Alcoholism." Finding that this field is occupied by so able an investigator, I have given the subject no especial thought. The subject is one of great importance, and medical men should place themselves in no doubtful position on this question. The resolutions meet my approval.

State medicine is yet in its infancy in this country. So far as I am informed, only five States have organized State Boards of Health. The vast amount of good which may be accomplished by such Boards, and the good already accomplished by the State Board of Massachusetts, lead us to hope that every State will

soon have in active operation such a Board. In 1873 the Legislature of Michigan formed a State Board of Health. The law took effect July 31st, 1873, so that the Board has been in existence only a few months. The Board has entered upon its duties, and its first report is already issued. For information concerning the law creating the Board, and the action of the Board during its brief existence, I send you the Report.

I believe that the most effectual way to advance State medicine is to secure the organization of State Boards of Health, and to arouse the medical profession to *their duty*, to make available the information concerning public hygiene already in their possession. It is well known how difficult it is to obtain from physicians the facts and data from which the generalizations may be drawn, which constitute the very basis of the science of public hygiene. The calling of the physician is a noble one—always under-estimated by the public, often underpaid. No class of men make such sacrifices for the relief of the suffering. Their daily experience is one of generous, unrequited giving. Generous as are the physicians, they must learn to do one thing more generous still, viz., to freely impart the facts and data in their possession, which in the final result, tend to destroy the office of the physician by securing universal health.

In reporting on the influence of drainage on public health, I shall attempt to show the influence of defective drainage by the indirect method, viz., by showing the beneficial effects arising from drainage, I shall consider the subject mainly as it influences diseases of malarial origin. I have not sufficient data to consider its influence on consumption.

GEOGRAPHICAL AND HISTORICAL.—From an early day this State has had an unenviable notoriety as a land of swamps, the home of malarial fevers of every name. This unfortunate reputation was partly the result of ignorance, but it had also a basis of fact. The State is very level; the crest of the water-shed in the central part of the State, not rising more than two hundred feet above the level of the lakes which inclose us on three sides, and into which the water flows. Our rivers are, for the most part, tortuous and sluggish, and natural drainage is imperfect.

The southern part of the State has little that would be called *swamp*. It has lakes, ponds, and wet prairie. There is little tendency to the accumulation of peaty matter in the wet grounds. In

the central and northern portions, by reason of their cooler climate, this tendency to the accumulation of peaty matter or "muck" is strongly marked. Aquatic plants grow with great luxuriance, and the imperfect decomposition of these materials tends to accumulate muck in all shallow bodies of water. The small lakes are constantly filling up with this accumulation, and are in time converted into swamps, then into marshes by being turfed over with coarse grass. The depth of this accumulation varies greatly, from a few inches to many feet. I have found it twenty feet deep, or in one instance fifty feet. Sometimes a lake of considerable depth is thus buried out of sight by the surface accumulation of vegetable matter. On these marshes, if the vegetable matter is quite deep, only willows will grow; if the muck is less deep, the American larch or tamarac grows; if a still thinner covering of muck, the black ash, red maple, and white elm grow.

This tendency to form peaty matter with its attendant vegetable growth, increases both the difficulty and the necessity of drainage. The peaty soil holds water like a sponge; the vegetable growth impedes the flow of water; the large deposit of decomposing matter makes more necessary drainage for health.

In 1850 the general government donated to the State the "swamplands" within its borders, on the condition that the State should expend the proceeds arising from the sale of the same, so far as may be necessary, to their drainage and reclamation, for cultivation, and the health of the country. The State received 5,680,054 acres. It would not be just to conclude that the State has six millions acres of swamps. These lands are designated "swamps" simply from the field notes of the United States Surveyor. If the surveyor found any amount of swamp in making his survey, he marked the whole legal subdivision "swamp," while possibly not more than ten to twenty per cent. of the land is really wet land. I have been told that whole townships of dry and arable soil have been marked by the surveyor as swamps.

The lists of these lands were received by the State in 1854. In 1857 they were placed in the market at a minimum price of five dollars per acre, the purchaser taking upon himself the responsibility of draining the lands he purchased. Of the money accruing from the sale of these lands, 25 per cent. was made a drainage fund for the county in which the lands were sold; this money was to be placed at interest, the interest alone being used to drain any lands remaining unsold in that county. The balance

of the proceeds of sale, viz., 75 per cent., was given to the common school fund. A large portion of these lands have been diverted to other purposes, *e. g.*, the building of roads through the newer portions of the country, under the fiction that these roads by means of their side ditches would drain the country. The purposes, therefore, for which these lands were granted have been realized only very imperfectly.

In 1857 the Legislature passed "An Act for the Drainage of Swamps, Marshes, and other Lowlands." This law was amended and improved in 1869. By this law the board of supervisors in any county might appoint a county drain commissioner, under whom proceedings might be instituted to secure the drainage of swamps, etc. The great obstacle to extensive and efficient drainage was the want of concerted action by the inhabitants, and especially the inability to compel unwilling and *non-resident* land-owners to pay for their share of benefit. Under this law it was possible to secure concerted action, because each parcel of land was assessed according to the benefit received, and this assessment was collected the same as any tax. Non-resident land-owners or "speculators" were thus made to bear their share of the burden, as well as receive their proportion of benefit. The law was made still more efficient by the legislation of 1871, which provided for the election of a township drain commissioner.

Probably no laws have been enacted in this State which have done more to promote the general welfare than these drainage laws. The benefit was delayed by the exigencies of the war of the rebellion, but within the ten years past large amounts of swampy and wet lands have been drained and reclaimed, to the marked benefit of our State both in an agricultural and hygienic view. They have accomplished far more in this respect than was secured by the millions of acres donated by Congress.

RESULTS OF DRAINAGE.

To obtain the results secured by drainage I have endeavored to obtain information from two diverse sources: 1st. The reports of township clerks to the Secretary of the State Board of Health; thus to secure a non-professional opinion from men of average information in all parts of the State, and each one giving his opinion without being biased by the expressed or known opinions of others; 2d. The opinions of physicians in active practice. For this purpose I issued the inclosed circular to physicians, sending

one with a stamped envelope to the leading physician in each important locality in the State. From some of the physicians I have received valuable replies, which I copy as part of my report; and from others replies of secondary importance; and from a still larger class no replies have been received. To those physicians who have favored me with replies my hearty thanks are due, for without these my report would be of no value whatever.

LANSING, February, 1874.

DEAR DOCTOR:—

At the last meeting of the American Medical Association, the undersigned was made a member for this State of the Section on State Medicine and Public Hygiene. A. N. Bell, M.D., chairman, has recommended the Section to take up the subject of "defective drainage" as the special topic for consideration for this year. Wishing to collect and present to the Section the views of the leading physicians of this State, concerning the influence of defective drainage on the prevalence of fevers of the intermittent or remittent class, and any observed benefits which may have arisen from drainage of swamps and wet lands, and also any influence from this cause which may have modified the type of disease, I take the liberty of sending to you the following questions, which may be answered by simple reference to the number of the question.

I rely upon the co-operation of the intelligent physicians of this State to secure the information desired by the Section. Any information you may give will be duly acknowledged in my report to the Section.

Please reply at an early date.

Very respectfully,
R. C. KEDZIE, M.D.,
Member of Section on State Medicine and Public Hygiene.

1st. Does the field of your medical practice embrace any considerable amount of swamps or wet land with imperfect natural drainage?

2d. Has any considerable amount of such land been drained by ditches within ten years past?

3d. Has drainage of such swamps removed, diminished, or modified malarial diseases in their neighborhood?

4th. How large a percentage of diseases in your practice is of malarial origin?

5th. Does the drainage of swamps have an immediate influence of any kind on the classes or the type of diseases?

6th. Has the type of diseases as a whole changed in your field of practice within ten years past? If so, what are the changes?

7th. Please state any views you may have of the influence of drainage on public health, as witnessed in your practice or coming under your observation.

REPORTS OF TOWN CLERKS.

There are 947 organized townships in the State. From 244, reports of the clerk have been received. The clerks in 219 townships reported the amount of swampy and wet lands, giving an aggregate of 749,201 acres. The clerks in 25 townships did not report the amount of swampy and wet land. If we take the 219 townships as representing the average condition of the surface of the State, we have more than two and one-fourth million acres of swampy and wet lands in the State. From the amount donated by the general government, we have over five and a half million acres. Probably the real amount is between these figures. I estimate it at about 4,000,000 acres. There are about 35,000,000 acres in the State. This would give about one acre of wet or swampy land in every nine.

The clerks of 176 townships return the amount of ditches dug during the past year, giving a total of 137,637 rods. If we estimate the whole State on this basis, it would give over 740,000 rods of ditches, or more than 2300 miles. The ten years past would show a like amount for each year. I think it safe to estimate that more than 20,000 miles of ditches have been dug in this State within ten years.

The clerks in 136 townships did not report the influence of drainage on health; 108 clerks made report. Of these 79 (73 per cent. of those reporting) reported the effect as good; 29 clerks (27 per cent.) reported that no effect was perceived. No one reported the effect as injurious.

These reports are not very decisive, but I give them for what they are worth. It is a question whether any class of men who have given no thought to statistics will ever prepare a statistical report of much value.

OPINIONS OF PHYSICIANS.

Replies to the circular. The figures preceding replies refer to the numbers in the list of questions in the circular.

HARTFORD, MICHIGAN, March 13, 1874.

Your circular received a short time since, and I answer it at the earliest opportunity.

1. It does.
2. There has.
3. It has modified such diseases.
4. 75 per cent.
5. It diminishes malarial diseases in number and severity; as to the others I have not been able to satisfy myself.
6. No; but less of the intermittent and more of the non-remittent class.
7. Where large swamps have been drained less malarial diseases appear in the neighborhood, and the people look more full of life, and appear to enjoy better health and more ambition. I believe when drainage in this State shall be made perfect, Michigan will no longer be called a malarious district, but a healthy and desirable one.

W. A. ENGLE, M. D.

COLDWATER, Feb. 15, 1874.

Your circular in reference to drainage is before me, and I regret that I shall not be able to exhibit by statistics "the faith that is in me" of the value of drainage in a sanitary point of view, for I am confident that figures arranged in line of facts, if true records had been kept, might have added something to the weight of evidence in its favor. I shall be obliged to depend upon memory, and a few hasty marginal notes made upon my day-book for such answers, as follows:—

1. Not a very large amount, but the indefinite word *considerable* may express it, as nearly as my *guess* that more than one-hundredth part of the land in Branch County would be improved from its natural condition by proper drainage, and that the hygienic condition of more than one per cent. of the dwellings would be much improved by the perfect draining of some portion of the adjacent grounds.

2. The people of Branch County have done fairly in this line

of improvement, but much is yet to be done. My own observation on the larger scale of drainage has been in the effects of the removal of mill-dams, thereby restoring the natural drainage. A great number of natural nuisances, called "cat holes," have been abated by private enterprise, in all portions of our county, and through all of southern Michigan, with very great benefit.

Some farmers are induced to preserve these basins for watering stock; but if wells, with windmills or some other device for the raising of clear sparkling water, were generally introduced, instead of using the teeming ropy fluid, healthier meat and milk and men might be expected, and miasmatic vapors prevented.

In the city of Coldwater much good has been done by diverting two vernal streams, at the eastern boundary, towards the north, keeping several squares dry and healthy.

3. It has "diminished" and "modified," and *mollified* "malarial diseases," and furnished better constitutions in which to combat other than malarial affections. (Of one fact, which I do not remember to have seen mentioned, I feel confident, *i. e.*, *post-partum* hemorrhages are more common in women depressed by malarial influences than in others.)

4. I have not been in general practice for the last ten years, but I do not doubt that fully 75 per cent. of the diseases in this vicinity are "of malarial origin."

5. From observations here, and in an equally malarious district—Orleans County, N. Y.—I consider the IMMEDIATE salutary influence of the drainage of swamps an axiom, for the reason stated in answer to the third question.

In undrained moist localities there is *more of the* "*conversion and blending* of types of diseases," more universal spread of epidemics and endemics, and severer grades of all, than in properly drained or under-drained situations.

6. Yes! Formerly the ague season was annual; recently agues are sporadic, except when the hygrometric condition brings the whole country in a state similar to the proximity of undrained swamps or a large forest.

That great scourge, spinal neuralgia, is far less common. Epidemic dysentery is almost a stranger, where it formerly swept away an annual harvest of children. Diarrhœas, once so incorrigible, yield far more readily. Erysipelas has not recently been epidemic, and is very seldom severe. More round-cheeked, red-

faced children are seen than formerly, showing changes in the atmospheric constitution.

7. I have been so verbose in my answers that I have nearly covered the appropriate grounds of this interrogatory. Great improvement has been made by clearing the streams of this level country of fallen trees and brush, under the general drainage law. In every township of this county, family histories could be gathered, which would illustrate the unquestionably beneficial influence of even partial drainage, and very few even tolerable farmers now show indifference to the subject. Still the unceasing voice of the physician should urge them to diligence.

J. H. BEECH, M.D.

HUDSON, March 3, 1874.

1. It does. There is scarcely a 40-acre farm in this vicinity but has from one-fourth to many acres of swampy land without natural drainage, and adjacent to this village, on the southwest, is a swamp of fifteen acres.

2. Yes. A thorough system of drainage was commenced six years ago among the farmers, and three years ago the swamp southwest of us was drained, and is now partially cultivated.

3. It has both diminished and modified to a very considerable degree.

4. 50 per cent.

5. During the season immediately following the draining of any considerable amount of swampy lands, malarial diseases increase in the immediate neighborhood, because of the more rapid decomposition of vegetable matter after the land has been cleared of brush and exposed to the sun. After a second or third stirring of the land, the health of the neighborhood is materially improved.

6. It has. Previous to draining and clearing swampy lands, paludal diseases of every variety prevailed extensively. Now, they are comparatively unknown, with this exception. The years 1871 and 1872 were very dry. The swamps became dry and bared to the scorching sun. Consequently remittent fever of a severe character made its appearance; also diarrhœa of a malarial character prevailed. Last year (1873) rain came to the relief. Swamps without drains, or otherwise, were filled with water, which has a preventive power as long as it is in excess.

Also, instead of intermittent fever we have rheumatism, general and articular.

I have seen but one case of purely congestive fever in 10 years, and that was a lumberman exposing himself day and night to all sorts of weather, in a very malarious district.

7. The drainage of any considerable amount of swampy lands will endanger the health of the people, and animals also, for a short time. The cause of this, I believe, is 1st. Drainage is generally carried on in the winter. Clearing the lands of trees also is done while the swamp is frozen. When spring arrives, the heat of the sun increases decomposition of all vegetable matter. Unite this with miasma arising from stirring the land, and pestilence spreads rapidly. 2d. This state of things does not last long, for after stirring and cultivating the land a year or two, the drains carrying off the surplus water, excessive decomposition ceases, and and where the summer sun heats up the soil, instead of putrid miasm filling our nostrils, we breathe easy, have pure air filled with the sweet perfume of timothy and clover blossoms, which give health and strength to all. Thus the permanent secondary effect of drainage is a great public benefit.

GEO. CHAPMAN, M.D.

DETROIT, Feb. 16, 1874.

Your circular is at hand. In reply to Nos. 1, 2, and 3, my practice does not come within their scope.

4. Perhaps 10 to 15 per cent.

5. I think it does.

6. Somewhat, more sthenic.

7. Perfect drainage lies at the basis of all sanitary measures, and cannot be dispensed with in either city or country. Drainage in Detroit in the last ten years has decreased diseases 50 per cent., in my opinion.

WM. BRODIE, M.D.

THREE RIVERS, Feb. 16, 1874.

1. It does not; consequently there is no system of drainage. The country is mostly of a semi-prairie character; light sandy soil, lightly wooded.

2. No.

3. ———

4. Yes, a large percentage. I would say three-fourths of the diseases are of malarial origin.

5. I judge from my former field of practice that it does. Perhaps it does not change the type, but modifies the severity of the symptoms. Upon a large tract of wet and swampy land, in Monroe County, where I formerly practised, a number of families were sick most of the time, and many cases were fatal, from an excess of malarial poison. Afterwards a thorough system of drainage was established, I noticed an immediate modification of the severity of the symptoms, and finally much less sickness in the district.

6. Not especially.

7. Most diseases in this vicinity are of malarial origin. The lay of the land and the soil would seem to contradict the generally received opinions, it being sufficiently elevated and rolling to shed or prevent the accumulation of large bodies of stagnant water. Yet there are in this immediate vicinity several mill-ponds along the rivers and one within the village limits, and we believe they are the cause of so much sickness of malarial origin as we are afflicted with.

L. S. STEVENS, M.D.

VERMONTVILLE, March 4, 1874.

1. Yes.
2. Yes.
3. Modified and diminished.
4. At least three-fourths.
5. Think it does.
6. Many more cases of rheumatism and tuberculosis.
7. The lands most perfectly drained are also cleared of timber and freed from decaying vegetable matter; hence it would not be fair to assume that all the immunity from malarial diseases which such locations enjoy is to be attributed to drainage, yet I think a fair proportion of such immunity may be ascribed to it.

WM. PARMENTER, M.D.

PAW PAW, March 5, 1874.

Your circular came to hand some time since, and ought to have had attention before now. I will answer briefly your interrogatories by reference to their numbers.

1. There is a large amount of swampy and wet land in this county, much of it with very imperfect natural drainage. Nearly all the swampy lands with which I am acquainted have streams

running through them, but in most instances they are on a level with the land, and have so little fall that they furnish no proper drainage.

2. I should judge that fully three-fourths of these lowlands have been drained pretty thoroughly within the last ten years. Thousands of acres of low and boggy land, that was formerly covered or partially covered with water throughout the year, have thus become dry.

I have ascertained from the drain commissioner for this county that within ten years, forty-five miles and sixty-five rods of ditches have been made in this county, averaging eight feet wide at the top and three feet deep. He thinks that one acre to every rod of ditching has been benefited.

3. Drainage has not thus far diminished malarial diseases in the county, but on the contrary they have been largely increased, the drying lands generating a large amount of malaria. I doubt not, however, but that this class of diseases will become greatly lessened after the drained lands have remained dry for a few years, and shall have become measurably turfed over.

4. I think at least seven-tenths of the diseases in this locality are of malarial origin, and the remainder more or less modified by malarial influence.

5. The immediate influence of drainage in this vicinity has been to greatly increase the number of malarial diseases without any perceptible change in the type other than a singular and almost unaccountable disposition to relapse.

6. I cannot say that the type of diseases as a whole has very much changed within a period of ten years.

7. It is plain that all drainage of wet lands, like letting water out of a mill-pond in warm weather, must, in first instance, increase all diseases of malarious origin, and such, according to my observation, has been the result of drainage in this county. There have been more malarious diseases, particularly within the last two years, than there had been for twenty years before. Perhaps some part of the sickness might fairly be attributed to the unusually dry seasons we have had for the two or three past years. At any rate they have added their influence to that of drainage, and we have not yet recovered from their combined influence. While there have been a great number of intermittent and remittent fevers, and other diseases of a malarious origin, no

cases have been really severe, nor have they, as a general rule, assumed a low type.

I have hurriedly answered your questions, giving the main facts, and you can elaborate them to suit yourself.

J. ANDREWS, M.D.

GRAND RAPIDS, Feb. 14, 1874.

Enclosed herewith please find answers to your circular of February, 1874.

1. There are about 350 acres of marshy land in one body within the city limits.

2. No. It is to be drained the coming summer.

3. ———

4. I am unable to give the per cent. It varies with different seasons of the year. Not nearly so much intermittent and remittent fevers as formerly, but the malarial influence can still be recognized in a very large proportion of cases of nearly every disease which prevails in this locality.

5. ———

6. There is less malarial influence; the fevers are of a lower type, less intermittent and remittent fevers, and more typhoid fever. Some typho-malarial fever; more nervous diseases than formerly, especially cerebro-spinal meningitis.

G. E. BLISS, M.D.

OKEMOS, March 4, 1874.

1. I came to Okemos in 1863. At that date there was a large territory in the northwestern part of our town bordering on the "big marsh," very imperfectly drained.

2. The most of this locality has since been drained by ditches.

3. In my judgment this cause has not only modified, but to quite an extent removed diseases of a malarial character in that locality.

4. I hardly know what answer to make to this question, only to state that there is a much less percentage of uncomplicated miasmatic diseases now than formerly, though quite a percentage assumes a periodicity sooner or later which is amenable to quinine.

5. This depends on circumstances and the season of the year the drain is made.

6. Answered in 3 and 4.

7. In looking over the past I notice this: Years ago my work

began usually in July, and continued until the middle of October. It then quieted down until early in the spring; then occurred a little spurt which soon subsided again. Now my practice is very uniform throughout the year.

J. P. SMILEY, M.D.

ST. JOHN'S, March 16, 1874.

1. Yes.
2. Yes.
3. Yes.
4. Formerly three-fourths—now not more than one-fourth.
5. Decreases malarial fevers one-half.
6. From malarial diseases to typhoid and other low forms of disease.
7. The drainage of the swamps in this vicinity has decreased diseases of malarial nature fully one-half.

J. W. PASQUELLE, M.D.

UTICA, February 28, 1874.

Your circular was received some time since; I have delayed, thinking to have more leisure in which to reply, but the leisure does not come, so I will answer briefly rather than not answer at all.

1. About one-third.
2. All have been drained more or less, some quite thoroughly.
3. Diminished in a marked degree. One marsh a mile wide and four to five miles long was drained in 1871. Previous to that time, hardly a season passed but that those living in the vicinity were prostrated with malarial diseases in some form. Since the marsh was drained, they have been comparatively free from sickness.
4. About twenty-five per cent.
5. I think it does. In the case referred to under 3, the drain was opened about the middle of August; and although there were many sick with fever and ague in that vicinity at the time, the number of cases diminished instead of increasing, as had been the case formerly at that season of the year; so much so, as to be a subject of common remark among those who were familiar with the facts. Such cases as did occur yielded more readily to treatment, and were less liable to recur.
6. I have only time to say that malarial diseases have been

gradually diminishing. I have seen the time here when fully seventy-five per cent. of all the sickness had its origin in malaria. This change is due, in my judgment, in no small degree to the artificial drainage which has been and is being carried out in this portion of the State.

7. I am fully convinced, from the experience and observation had during twenty-two years of practice in the profession of medicine in a locality where artificial drainage was, and is yet largely necessary in order that the land should be fit for agricultural purposes, that the authorities and people have been and will continue to be amply repaid for all the trouble and expense they have been or may be to in the work of drainage, in the good that has and will continue to grow out of it to the *public health* alone. As a sanitary measure, it is every way worthy of the earnest attention of the National and State Boards of Health, and all members of the profession.

WM. BROWNELL, M.D.

GREENVILLE, February 21, 1874.

Your communication is duly received, and I answer as follows:—

1. My practice does embrace a large amount of wet and swampy land.

2. In one direction from this town a large amount of land has been drained and cleared within ten years past.

3. In that direction malarial diseases are very much diminished, while in neighborhoods where little drainage has been made the disease is very rife.

4. About two-thirds of my practice is entirely or partially dependent on malarial origin.

5. I think it has an immediate influence.

6. The only diseases that have changed are those of malarial origin—a partial change to continuous, or typho-malarial fever.

7. I think drainage favorably affects the public health not only in preventing malarial diseases, but also others, such as rheumatism, phthisis, etc., by giving us a dryer air, as I believe a moist air has largely to do with those diseases.

O. E. HERRICK, M.D.

LANSING, March 9, 1874.

In reply to your circular, I can say but very little, if anything, that will be of value to you, but will reply as well as I can, knowing that, however insignificant my personal knowledge is concerning the questions involved, it may aid you in your final summing up.

1. No.

2. No; not at least as regards *large* swamps or low lands.

3. I suppose so, but have no data to report.

4. I think nine-tenths of the diseases I treat are more or less complicated and modified by malarial influences. Probably one-half are purely malarial.

5. From year to year, as drainage becomes more perfect, I have observed a diminution in the amount of purely malarial diseases, and that the fevers do not yield as readily to anti-periodic remedies, there being a larger per cent.—say an increase in eight years of ten per cent. over former years—of continued fevers, and a diminution of twenty per cent. of intermittent fevers.

"Bogus Swamp," lying about one mile west of the populous portion of Lansing, was formerly a source of much fever and ague to the people living in its vicinity, and that portion of the city directly east of it. But as from year to year the timber and underbrush have been removed, and the swamp drained, the amount of sickness in the district above mentioned has been less.

In the city of Lansing, last spring, the city Board of Health made vigorous efforts to place the city in as favorable condition as practicable; and among other things secured, many low water-saturated places were filled up with earth, or else drained. From early spring to the present time we have not suffered from any epidemic or prevailing zymotic disease, and the few contagious diseases among children have been light. It is believed there has been a less per cent. of sickness in the city during the past winter than during any previous winter; and I believe that the sanitary measures of the Board of Health, among which was the drainage and filling of the low places, have had much to do with this exemption from disease.

I believe that subsoil water, from being highly contaminated with decomposing matter, influences to a large extent contagious diseases and malarial fevers. Last summer a few cases of con-

tinued typhoid or typho-malarial fever occurred in this city, but in each instance, as far as I know, the cause could be traced to some local cause—most generally impure well water. The subsoil being clay in the largest part of the city, it is sufficiently impervious to water to prevent its becoming contaminated to any great extent by local decomposition, and at no time in the year are there many wells in the city containing surface water.

In one case of typhoid fever, which proved fatal last summer, I traced the cause to impure water resulting from the polluted surface water filtering through a light sandy soil, and although at times the family were aware that the water was impure, they could not account for the fact, as they had cleaned the well twice during the season, and found nothing in the well that they could distinguish as impure except the water itself.

I have stated briefly and in haste all that I can imagine will be of interest to you from my pen.

GEO. E. RANNEY, M.D.

THORNVILLE, March 12, 1874.

Your circular was received, read, and I may add neglected, but if not too late I will now attend to its requests.

1. There are some large swamps, many little marshes, called by the farmers "cat holes," and on the streams, mill ponds, artificial swamps, worse than natural ones. The eastward side of a mill pond is always infested with malaria, and is more sickly the dryer the season.

2. There is not sufficient thorough drainage yet to base an opinion on. Where mill-dams have been torn down, and the streams allowed to resume their channel, malarious diseases have diminished.

3. Answered by the above.

4. I think I may safely say 50 per cent.

5. I believe the drainage of the swamps in hot weather would have an *immediate* influence to make the vicinity more malarious. When a mill-pond goes off in the summer, and the oozy, slimy sediment is baked and dried in the sun two or three weeks, it makes everybody sick, even old residents who supposed themselves thoroughly seasoned against chills and fever.

6. Diseases seem to me to have more of a typho-malarial character than they formerly did.

7. There can be no doubt of the beneficial influence of

thorough and efficient drainage on the public health, and through its means we may confidently expect to see the amount of miasmatic diseases materially diminished and the yellow demon that infests the marshes hunted to his inmost lair.

J. S. CAULKINS, M.D.

LAPEER, March 7, 1874.

I feel that an apology is due for my tardiness in replying to your circular. An unusual press of business is my only excuse. And then I was desirous of giving my views of the most fertile source of intensified paludal poison, gathered wholly from observation during an active practice of eight years in a malarious section of the country.

1. Yes, about one-fifth of entire surface.
2. Yes, about one-third of the swampy lands.
3. I think not materially.
4. I should say one-third of purely malarial origin.
5. In many instances it intensifies the malaria, particularly if the soil is disturbed.
6. The diseases of this region are yearly becoming more adynamic in character.
7. The system of drainage has been so defective in this vicinity that the public health has not been very materially changed thereby. Where artificial drainage has reclaimed large tracts of land, I think there has been an appreciable diminution of intermittents, but an increase of continued fevers, mostly of a remittent type. And here let me say that I am firm in the belief that our so-called bilious, remittent, and autumnal fevers of a continued form are caused by this malarious poison in some form. And as modifying influences in the development of this subtle poison in its greatest intensity stand prominent after heat and moisture, nature of soil, the geological formation, sudden changes in the electric fluid, and season of the year. My attention has been more particularly directed to the character of the soil in favoring the generation or liberation of paludal poisons in the production of fevers of the intermittent or remittent class. I find in localities having good natural drainage, with a surface soil largely made up of vegetable mould but resting upon a stiff clay subsoil, that if the soil is turned up either for the first time after being cleared of the forest trees, or after lying dormant for many years, you will almost certainly see developed that class of dis-

eases commonly termed miasmatic. During the past five years there have been two additions to our village, one of forty the other of sixty acres. As usual, immediately after the survey the lots were placed in market, without any grading of streets, by which surface water might pass off, or any adequate underdrainage; the plots were soon occupied, the virgin soil turned over, imperfectly constructed wells dug, and damp or wet holes used for cellars. I need hardly say that almost every family living in these localities suffered from intermittents during the warm months, and the most protracted forms of continued fever during the winter months. These two locations were much higher than some other portions of the village, the surface undulating, and in many respects were considered very eligible for residences. The subsoil is a brown, very tenacious clay. The water supply is wholly from wells, the most of which are more or less affected. Upon one of these additions nearly every family is suffering this winter with one of the most unmanageable forms of remittent fever I have ever tried to treat—four families within a stone's throw have had from three to five cases in each, and yet there is no surface water in the vicinity. Some families, moving in during the cold weather of winter, have been similarly affected, so that it would seem to be an influence or poison existing there after the season for generating miasm had passed, according to the accepted theory. I believe the wet, heavy soil becomes impregnated with it, and retains it even for months after the formative season has passed, and also that the water itself, percolating this soil, is the favorite menstruum for this noxious agent, which may become operative in the depth of winter as well as during the heat of summer, simply by using such water for culinary purposes.

May we not then urge upon corporations the importance of requiring thorough drainage before accepting platted lands for occupancy as residences? Also the construction of good wells by which the surface water is entirely excluded? I believe that a systematic plan of underdraining in these heavy soils would very materially aid in removing this fertile source of disease. In the families alluded to above, who are at present suffering from malarious fevers, I have ordered filters for every house, to be constructed simply of charcoal and gravel, and hope to have all the water used by them filtered; but whether this process even can serve to separate or neutralize so subtle an agent is by

no means certain. I wish the attention of the Section might be directed to those disinfecting or neutralizing processes which have for their object the purifying of unwholesome water. I think the public need definite information on this subject. They are very much divided as to the propriety of depending wholly upon rain-water for household use. When water is reached only by very deep wells, they resort pretty generally to filtered rain-water, and, as they become accustomed to it, they consider it more wholesome than spring or well water, loaded as it generally is with salts very essential in the animal economy.

But I must not burden you further with subjects, no doubt, already well decided in your own mind.

A. NASH, M.D.

BAY CITY, March 9, 1874.

I have been a resident of Bay City only one year. I have been a resident of Fenton, Genesee County, for fourteen years, and will reply for that locality.

1. The region is one known as "oak openings," with small lakes and a limited quantity of marshy land—perhaps ten per cent. is wet land, covered with grass or tamarac.

2. Yes; perhaps fifty per cent. of the wet land has been cleared of timber and drained.

3. The amount of wet land is so scattered among the improvements that there is not so marked a change in any one year; but in the ten years past the miasmatic diseases have gradually diminished fully one-half.

4. I think ten years ago it was eighty per cent.—now, perhaps, thirty per cent.

5. Perhaps not much, if any. The malarious condition is increased for a time until the ground has been exposed to frost, sun, and air, and a more thorough decay of vegetable matter.

6. Yes. Formerly the prevailing type of fevers was altogether of an intermittent character, while now it is remittent fever and typhoid. The fevers are more largely continued in type.

7. In former years our sickness was almost entirely autumnal, and half of the practice for the year was done in August, September, and October, while now the diseases are changed, and prevail throughout the year. I think that other improvements and clearing of swampy lands have much to do with the changed condition as well as drainage.

WILLIAM R. MARSH, M.D.

WYANDOTTE, February 17, 1874.

1. Yes. Almost the entire field is of that nature.

2. Yes; a very large proportion.

3. It has very much diminished, and in the longer and more thoroughly drained parts has modified malarial diseases, in my opinion.

4. I think fully seventy-five per cent., and a larger proportion complicated and modified by malarial influences.

5. Yes. It increases the amount and severity of malarial diseases in the neighborhood.

6. There has been a very decided increase in typhoid, or, more properly, typho-malarial diseases.

7. Sixteen years ago I came to Wyandotte. The site of the town and the surrounding neighborhood was a vast tract of forest, with clearings and partially cultivated farms interspersed. The country was almost impassable back from the river except in winter and summer. The immediate locality and neighborhood of Wyandotte was being rapidly cleared of its wood to make charcoal for the furnaces, and was being partially drained by the making of roads to get at and bring in the wood. Every body had ague; and those who had not chills, fevers, neuralgias, etc., had an aguish cachexia, which manifested itself in an attack of chills and fever upon the slightest injury, or even unusual fatigue. Women a few days after confinement almost invariably suffered from ague, those who had been previously free from its symptoms as well as those who had been ailing. All this has changed. There has been as marked a change in the character of the diseases of the locality as in the aspect of the country. The forests have been cleared off, the fields ditched and cultivated, roads have been constructed, and county drains extended from all the low spots and marshes to running water. And with these changes there has been a decided improvement of the general health, and freedom from the malarial cachexia.

Malarial diseases still continue the prevalent diseases of the locality, but not in that constantly prevalent form in which they were wont to prevail.

With these changes we have had within the past few years, and becoming more rife each year, typho-malarial, commonly called typhoid. This was very rare till six or eight years since, and seems to grow year by year more prevalent.

Our drinking water is, as it always has been, surface water,

collected in shallow wells. If we go deep enough to avoid that, we reach sulphur water, undrinkable.

The increase of typhoid I ascribe to increasing quantities of organic matter in the soil year by year, with deficient drainage of premises. With this brief statement, which gives my answer to query 7, I must leave the subject.

E. P. CHRISTIAN, M.D.

EAST TAWAS, Feb. 1874.

Your circular relative to the subject of "defective drainage" was duly received. I will not be able to communicate much information that will be of service to you, but most cheerfully contribute my mite. I came to East Tawas in April, 1868. The village is built upon a sandy level, elevated about fifteen feet above the level of Tawas Bay. The back part of the village is on a second level from five to ten feet higher. The surface is dry, but the sand is saturated with water the year around. Back of the village, westward, the land is low, and swampy, for three-quarters of a mile, then there is a strip of dry land of variable width, which forms the eastern shore of Tawas Lake, a body of water six miles long, two miles wide, and averaging six feet in depth. The outlet of the lake is Tawas River, which is two and a half miles long, and empties into Tawas Bay, a fourth of a mile below Tawas City. A vast quantity of water flows through that channel, of a uniform temperature, seldom freezing. The water is strongly chalybeate. The lake formerly extended to Tawas City, but has filled up, the lower end of the Lake being a large marsh, a vast deposit of vegetable matter. On the west side of Tawas River it is marshy down to Tawas City. Every spring and fall the marshes are overflowed, the river being an insufficient drain.

Three miles northeast of East Tawas, is Mud Lake, which is in the midst of a marsh. The outlet, an inconsiderable stream, formerly flowed through East Tawas. Seven years ago, a channel was cut from the lake direct to Tawas Bay, forming a new outlet. Quite a stream of water ran through the old channel in 1868, but as our streets were graded and improved, the old channel was filled up, with the effect to make a swamp between the village and the lake. Excepting two or three very small streams, neither of the lakes have visible inlets. Tawas City is situated two miles southwest of East Tawas, on a dry strip of sand lying between

Tawas Bay and Tawas River, varying in width from sixty rods, at the upper part of the village, to a point, at the mouth of Tawas River. On the western side of the river the land is low and wet: a stream, called Dead Creek, empties into Tawas River at Tawas City. The land at the mouth of the creek is marshy. For from six to eight miles back of the bay, the face of the country is marked by a succession of ridges of sand and bodies of water, and the whole distance is heavily timbered, the timber and undergrowth being very dense. Cedar and tamarac swamps abound. About seven miles west of East Tawas, the land becomes more elevated, rising about one hundred feet within a mile, then stretching away to the northwest twenty miles, and due west double that distance, to the pine lands on the head-waters of the Aux Gres, Rifle, Pine, and Au Sable Rivers. They are marked on the map of Michigan as "elevated tableland," and are here called "the plains." It is a vast uncultivated region, which rises gradually from its eastern border to the "great water-shed," at which point the elevation is about eight hundred feet above the level of Tawas Bay. The plains are nearly destitute of timber, but are sparsely covered with a growth of scrub oak and pine; a great number of beautiful small lakes diversify the scene. Our villages are between two bodies of water—to the east, Tawas Bay and Lake Huron; to the south, Saginaw Bay; westward, for seven miles, a succession of marshes, swamps, and wet lands, with the larger bodies of water, Tawas Lake and River. The wet lands amount to thousands of acres, and they are covered with a growth of vegetation not exceeded in luxuriance by the most extravagant growth of the tropics.

Tawas Lake produces an annual growth of "wild rice," so abundant that it bids fair to convert it into a great marsh in course of time. With all the apparent sources of malaria around us, we are, however, quite free from malarial diseases.

The foregoing will serve as an answer to your first question. To your second question I answer—no.

3. ———

4. In 1868, 5 per cent.; in 1869, 15 per cent.; in 1870, 8 per cent.; in 1871, 20 per cent.; in 1872, 6 per cent.; in 1873, 40 per cent.

5. ———

6. Yes. In 1869 remittent fever of a very mild type, and intermittent fever exceedingly mild, popularly called "the chills",

were the only diseases of a malarial origin noticeable. The increase in the percentage of cases in 1869 was altogether from the additional number of cases of intermittent fever. The changes in type have been each year from very mild to more grave. During the past year, nearly all diseases were, to a greater or less extent, modified by malarial and epidemic influences. The eruptive fevers, diarrhœa, dysentery, and rheumatism, prevailed, with remittent, intermittent, typho-malarial, and enteric fever, pneumonia also.

7. My view of the subject is, that the immediate effect of the drainage of swampy or wet land, is to render malarial diseases more prevalent, and to make them more virulent, for a time.

The *ultimate result* would be to render such diseases less frequent, and to deprive them of their virulence.

Artificial drainage, to be successful, must be thorough. Imperfect drainage is worse than none, and should be classed with meddlesome practice, and let severely alone.

In the spring of 1872, a small drain was constructed from the wet lands back of our village to Tawas Bay, which partially drained perhaps a hundred acres of land. About the same time the timber was cleared away from about as many acres north of the town. It is the only artificial drain in the village, and is inadequate.

In building the plank road through the wet lands back of Tawas City, ditches were made on each side of the road, which to some extent drained some of the contiguous lands, but very imperfectly, as they were intended only to keep the road dry. The ditch made from the road to Dead Creek was too small to convey the water away during the wet season. These statements may serve to base an answer to question 3d. Since those improvements were made it has been more sickly, because of the greater number of cases of malarial disease, and their increased severity.

Previous to my coming to Michigan I practised, for many years, in Morgan County, Ohio, in the Muskingum Valley, and visited the Tuscarawas and Wills Creek Valleys, and parts of the Hocking, Sciota, and Miami Valleys, where malaria abounded. I spent two years in Zanesville, Ohio, just before I came here, and was frequently along the Licking River, where malaria abounds; and met with abundant proofs that aguish districts were rendered comparatively free from malarial diseases by being thoroughly and permanently drained.

JAMES S. REEVES, M.D.

REPORT ON STATE MEDICINE AND PUBLIC HYGIENE, AND DEFECTIVE DRAINAGE AS A CAUSE OF DISEASE IN MINNESOTA.

By A. B. STUART, M. D.

On behalf of the State of Minnesota, which I represent on the Section on State Medicine and Public Hygiene, I beg leave to submit the following report:—

"State Medicine" I understand to be a system of public hygiene instituted by a State, from a sense of imperative duty toward its citizens; and is obligatory rather than optional.

The maintenance of health, and the physical and mental development of the people, should be the chief objects of a government. This duty involves legislative enactments; but primary to any important step in this direction is an intimate knowledge of the medical topography of the country, in all its natural features of soil, climate, geology, and physical characteristics; its adaptation to cereal products, and commerce (involving dense population); its grazing capabilities; its lumbering and mining interests; with the disease contingencies incident to all occupations, or growing out of their prosecution. The knowledge involves not only the investigations of medical men, but of the geologist, chemist, engineer, commercial interests, and all citizens whose scientific attainments or practical good sense render them competent to labor for their own and the public good.

With the natural conditions of a locality as to health or disease, must be considered the probable changes incident to its occupancy and improvement, as in cities, agricultural districts, utilizing of water-power, drainage of marshes and lakes, construction of canals and railroads, and public institutions of all kinds.

Further than this, which tends chiefly to the *prevention* of disease (which, not far in the future, will engage the attention of the medical profession more than the cure), must be considered another important obligation of the State, viz., such measures as

will prevent the spread of contagious and infectious diseases, as are not included in those instituted to arrest their endemic development.

With the knowledge stated, it is the province of the State to care for the welfare of its citizens by enacting such sanitary laws as will be commensurate with its duty in the premises.

This duty, knowledge, and action may be all embraced in the general term of "*State medicine*," and have general application, with local executive enforcement ; but should in their operations be so instituted that *all* results might be made a matter of record for public enlightenment.

To do this, some plan must be devised by which the data obtained in one locality may be made available for the use of others; or, when experience has dictated a change of sanitary regulation, that it may be for the benefit of all. The mere enactment of laws towards the correction of a public evil, is of but little avail, unless the people are convinced that the necessity for their institution exists. To assist in bringing it before the public and educating it in that direction, and promoting the measure proposed, let there be organized a NATIONAL SANITARY BUREAU, on a plan somewhat similar to the Agricultural or Educational Bureaus; with auxiliary State organizations, ramifying into counties, cities, and towns, subordinate to, but not under the control of, the national establishment. The central bureau might be made the recipient of State statistics, for the purpose of collation and publication. The business and investigations of central and auxiliary organizations should be under the control of officers, medical and non-medical, but selected solely on account of their fitness for their peculiar duties.

If the establishment of an independent department of health should be considered premature or impracticable, have it connected with some of the other departments, Education or Census Bureau, or the Department of the Interior, as contemplated in Senator Sargeant's bill. But my own impression is shown in the following resolutions, brought before our State Medical Society, at its annual meeting, last February:—

"*Whereas*, It has been proven by actual experience that State boards of health are of advantage to subordinate boards, and other organizations having for their object the prevention of disease, especially epidemics, and other sanitary measures in connection with the collection of vital statistics; and believing

that the same principle can be carried still further in the establishment of a national organization; therefore,

"*Resolved*, That the State Medical Society of Minnesota, now assembled, recommend the organization of a National Sanitary Bureau at Washington, D. C., in connection with the Surgeon General's Office, in a contributory relation with the medical profession, and all others the duties and qualifications of whom entitle them to recognition. The superintendent of said bureau to be appointed by the Surgeon General, subject to the approval of the Senate, either in or out of the army, chosen with especial reference to his qualifications for his duty.

"*Resolved*, That a copy of the foregoing preamble aud resolution be forwarded to each member of Congress from this State.

A. B. STUART,
J. D. FLAGG,
H. H. KIMBALL,
F. H. MILLIGAN,
J. E. FINCH."

I do not think the Society represented the opinion of the profession of the State, in tabling those resolutions; judging from the answers received to circulars.

While I fully endorse Dr. Horner's resolutions on intemperance, as presented to and accepted by the American Medical Association at the last annual session in St. Louis, I think their practical effect is gained by their publication.

PUBLIC HYGIENE.—Under this head I selected the subject of *defective drainage*, in accordance with your suggestion, and sent circulars to representative members of the profession located in various parts of the southern portion of the State, the northern and larger portion being too sparsely settled to obtain reliable information.

"CIRCULAR.

"1. To what extent are the diseases of your county due to insufficient drainage?

"2. How many acres of marsh lands have you in your county?

"3. Have you intermittent diseases not attributable to marshy deposits, but to soil saturation?

"4. Are there in your county places where intermittent fever has disappeared as a result of systematic drainage of the surface saturation?

"5. What system of drainage is necessary to render your county free from malarious diseases?"

1. A.—Five-sixths of the counties reporting say, "To a very small extent." One-sixth reports, "To a large extent."

2. A.—I am unable to obtain accurate answers; see Gov. Davis's letter reporting number of acres of marsh lands in the State.

The counties of Ramsey and Houston report only about 250 acres each of marsh land, but the largest proportion of disease from insufficient drainage. In Ramsey, however, this is due principally to insufficient drainage of the city of St. Paul.

3. A.—Two-thirds reporting answer, "No;" one-third, "Yes."

4. A.—Eleven-twelfths report, "No;" one-twelfth, "Yes."

5. A.—Five sixths consider no drainage available at present; one-sixth recommend ditching and surface drainage; the latter especially for the cities of Mankato and Winona.

The number of counties reporting is two small to make the record applicable to the State; excepting those bordering on the Mississippi River from Morrison County, south, which have, with very few exceptions, responded to the circulars.

Malarious diseases, away from our large watercourses, are almost unknown; and, as a rule, do not extend north of Minneapolis, although a few cases have been known as far north as St. Cloud.

During the summer of 1871, fever and ague, and all kindred diseases, prevailed along our larger watercourses, but especially those of the Mississippi and Minnesota Rivers.

Along the former from Minneapolis to the southern boundary of the State, this is supposed to be due to an unusual rain-fall overflowing the banks and backing water into the small streams, lakelets, and sloughs, in connection with the unusual summer heat; that is, heat and moisture being coincident for a period sufficient to produce the malarious poison.

Usually our summer's heat is not intense enough, nor continuous sufficiently long, to generate paludal poison. Home-developed fever and ague is unknown in Duluth, and yet moisture both from marsh lands and soil saturation is in close proximity to the city.

The small streams through the narrow valleys extending from the Mississippi River to the upland prairie, have a fall of from one hundred to four hundred feet, in from five to fifteen miles; and form a good system of drainage to the adjacent lands. But no system of drainage can be utilized in the marsh lands along

the large watercourses, especially the Mississippi River, in consequence of the rise and fall of the water. There are a few exceptional places.

As our State becomes more thickly settled, and the soil brought under a better state of cultivation, there will doubtless be some system of drainage adopted in the upland prairies in the region of the numerous lakes.

Along the Northern Pacific Railroad a system of drainage by *ditching* has been instituted; not for the purpose of freeing the country from malarious diseases, as they do not extend that far north, but to reclaim the land.

I have been favored with a long letter from the Rev. Tho. S. Williamson, M.D., a missionary among the Indians (principally the Dakotas) of this State. His labors, commencing at Fort Snelling as early as the year 1835, extended westward to Lac qui Parle, near the western boundary of the State. After residing at Lac qui Parle for several years, he removed to Kaposia, on the Mississippi River near the site of the present city of St. Paul. He attributes most of the diseases, and mortality resulting therefrom, to the want of food, especially animal, both in quantity and quality; exposure to the vicissitudes of the atmosphere without sufficient clothing; the long and excessive fatigue of the chase, and hunting for food in general; and protracted encampment on marsh lands, especially along the Mississippi and Minnesota Rivers.

His observations extended over an average of a thousand Indians. He attributes half the entire mortality to violence in warring with other tribes, drunken quarrels among themselves, accidents, etc. Of those over ten years of age who died of disease, one-half was the result of phthisis pulmonalis; which he attributes to their mode or manner of living, as above stated, with an hereditary taint of scrofula, and an almost constant winter endemic of influenza.

Occasionally, he has been able to trace it to, or following paludal diseases, influenced by the previously mentioned causes. Few cases of pneumonia are reported, and but one death therefrom. Phthisis prevailed more among the men than the women. Where animal food could be obtained without too much fatigue, phthisis and kindred diseases were less frequent and severe among both men and women.

He says: "Almost every year of my residence in Minnesota,

I have seen cases of paludal disease, but during my first ten years, only one fatal case; this, like most of the others, had its origin in the swamps of the lower Minnesota and Mississippi Rivers." The first cases of typhoid fever bear date with the exceedingly warm summers of 1845 and 1846, with an increase "in quantity and quality" of all paludal diseases; intermittent and remittent fevers frequently following their victims into the winter and in many cases proving fatal. Also, dysentery among adults, and cholera infantum among children, which he attributes to decaying vegetable matter, the result of heat and moisture. Hence, *defective drainage* was indirectly the cause of the sickness and resulting mortality; but, unfortunately, drainage was, and is almost impossible in these localities.

Dr. Williamson was an intelligent, truthful, and close observer, and his record is trustworthy. I intend publishing his letter in our Medical Journal.

A. B. STUART, M.D.,
Member of the Section from Minnesota.

APPENDIX.

STATE OF MINNESOTA, EXECUTIVE DEPARTMENT.
ST. PAUL, March 18, 1874.

A. B. STUART, M.D., *Winona, Minn.*

The questions asked in your esteemed favor of yesterday are difficult to answer with precision.

An approximate estimate can be gathered, however, from the State records of "swamp lands" certified to this State under the act of Congress granting to the States the swamp lands within their limits.

The test by which the lands are characterized is fixed by the act of Congress.

Those lands are swamp which are wet and overflowed and thereby rendered unfit for cultivation (quoting from memory).

I have examined the records, and find results, up to 1866, as follows:—

Acres certified to the State, 721,000.

Acres to be certified (selected), 721,000.

Add for private entry, 150,000.

Add for lands which may be called marsh, yet which are not carried by act of Congress, 1,000,000.

This last estimate is my own, and is, of course, purely conjectural.

Whether it is applicable depends much upon what the Association means by the term, "marsh lands."

Yours,

(Signed) C. K. DAVIS.

REMARKS.

Making a deduction of twenty per cent. for lands that are called "swamp lands" but are not (there is from ten to twenty per cent. of arable land in all larger tracts of "swamp lands" certified to the several States by Congress) we have within our State limits, 2,073,600 acres of "swamp lands," of which fully one million (1,000,000) is located in the southern portion (two-fifths) of the State over which my report extends, and can be termed "marsh lands."

DEFECTIVE DRAINAGE AS A CAUSE OF DISEASE IN THE STATE OF NEW YORK.

By A. N. BELL, M.D.,
OF NEW YORK.

As long ago as 1830, the Medical Society of the State of New York undertook to make a medico-topographical survey of the State, comprehending the relations of the prevailing diseases to the physical geography of the State, and the habits of the people. The report which followed, had it been acted upon by the Legislature as recommended by the Society, would have saved thousands of lives to the State, and millions of dollars to the treasury. But even earlier than 1830, and ever since the first systematic medical survey of the State of New York instituted that year, and reported in 1832,[1] the Transactions of the State Medical Society show a continuous recognition of defective drainage as a chief cause of an excessive mortality.

An admirable summary of the reports of physicians in this regard, up to 1860, is given by the late Prof. Joseph M. Smith, M.D., in a *Report on the Medical Topography and Epidemics of the State of New York*, to be found in the Transactions of the American Medical Association for 1860. At the very time of Prof. Smith's report, a second special committee of the Medical Society of the State, with Dr. Elisha Harris as Chairman, was engaged on a topographical and hydrographical survey with reference to systematic drainage as a hygienic measure. Dr. Harris's report to the State Society was made only one year subsequent to Prof. Smith's to the Association.[2] It hardly need be stated that Dr. Harris's investigations were systematic and comprehensive. Circulars were addressed to the best known

[1] Transactions N. Y. State Medical Society, 1832.
[2] Ibid., 1861.

observers, which had the effect of eliciting much new information, and emphasizing all that had been reported before on this most prolific source of disease throughout the State. In Dr. Harris's report: "It is estimated that the salt marshes of Manhattan, Long, and Staten Islands comprise more than *one hundred and twenty square miles.* Besides these extensive areas of marshy land upon these islands, we meet with a vast number of undrained basins and ponds, which are persistent sources of malaria." Appended to Dr. Harris's report is a letter from General Egbert L. Viele, the well-known sanitary engineer of New York. General Viele repeats facts which he has stated before, because, in his own words, "the startling facts developed by sanitary criticism cannot be too often repeated, nor the facts too often urged upon a community whose indifference would disgust if it did not alarm. The city of New York has no topographical surroundings to share with it any responsibility for its annual roll of death. Lying upon a spur of primitive rock, vertically upheaved and contorted during the convulsive throes of anterior ages, its natural features are wonderfully adapted for the purposes to which, in the progress of civilization, it has been devoted. A great commercial metropolis, nature has placed no obstacle in the way of its growth or its prosperity. Its harbor, while owing nothing to the hand of man, is excelled by none in the world. Along its entire water front of twenty-five miles the largest ships can be moored. Yet this magnificent harbor is being filled up and destroyed in consequence of the badly constructed piers and wharves; the latter for the same reason are fast becoming useless, while the obstruction and filling up of the original drainage streams is causing an accumulation of stagnant water, and water in the soil, the effect of which has been severely felt in the past, and is daily becoming more alarming. The extent of this evil may be estimated from the fact, that previous to the occupation of the island by Europeans, there were in existence twenty-one miles of natural watercourses constantly running, emanations of springs, and from regular rain-falls, besides which there were numerous deposits existing in various localities, none of which have ever been removed by any regular system of drainage. A large portion of them are now concealed from view by earth fillings, which have the effect not only to perpetuate but to increase the quantity of stagnant water, to the permanent injury of the health of the city. . . . The subject

of drainage, so important to the public health, seems to have escaped the minds of the commissioners who laid out the city, as they passed it over under the impression that a complete system of sewerage would answer all sanitary purposes; but sewerage is not necessarily drainage; and no matter how perfect the system, nor how well it is carried out, it may, and in this city does, fail to carry off a large amount of water, which, by being suffered to remain, has been and always will be a fruitful source of pestilence. The rectangular plan upon which the upper portion of the city is laid out has no reference either to the topography or geology of the ground, and the sewerage necessarily conforms to this plan, while a proper drainage is dependent upon both geology and topography. Therefore the sewerage is inconsistent with drainage. A glance at what are called 'sunken lots,' all over the upper portion of the city, will show at once that the stagnant water has no outlet. The design is to fill the lots up when they are required for building purposes; but this will not get rid of the water, which, falling on the surface of the ground, perhaps a mile off, percolates through the surface soil until it meets with an impermeable substrata, along which it descends until it reaches the lowest water level, when, if not drained off, it remains to ascend by capillary attraction into the superincumbent earth, keeping it always cold and moist, and making the locality unhealthy. . . . A line of highest elevation, extending the whole length of the island along its westerly side, forms a water-shed, from which the twenty-one miles of drainage streams descended to the east and west. In addition to this general slope, there are many lateral depressions and corresponding ridges; these are not continuous, but very much broken, forming a series of hills and valleys whose drainage streams flow directly into the north and east, or through conduits to the rivers. . . . The simple construction of dry stone drains along the bed of the original watercourses now filled up, would have saved thousands and thousands of lives. To hesitate to do this, where it is not too late, is in the face of well-established facts simply wicked. But this can only be done by law.[1] The city of New York is only a type in this matter. Every word with regard to drainage here, applies equally as strong to drainage elsewhere. The facts

[1] Further on it will be seen that since these remarks by General Viele, a drainage law for the city of New York has been enacted.

need only be known to show the paramount importance of drainage to the health of every community—large and small."

Your reporter, being also Chairman of the Committee on Hygiene of the Medical Society of the State of New York, addressed a circular, similar to the one which has been sent to all the members of the Section on State Medicine and public Hygiene of the American Medical Association, to every County Medical Society in the State of New York, together with a copy of a resolution of the State Society—recommending to the County Societies, the appointment of Standing Committees on Hygiene, to co-operate with the Standing Committee of the State Society. The result has been the report herewith incorporated, and the action thereon of the Medical Society of the State of New York.

KINGS COUNTY.[1]

The work of the Committee has been confined to the subject of Defective Drainage, as comprehended in the questions submitted by the Committee on Hygiene of the State Society.

1. *To what extent are the diseases of your county due to insufficient drainage?* The correct answer to this question may be approximated by an estimate of the mortality from diseases largely due to defective drainage in the city of Brooklyn. For the four weeks ending Nov. 29th, the total mortality in this city was 761.

Of this number, consumption and scrofula killed 121; croup, diphtheria, and quinsy, 76; pneumonia, pleurisy, and bronchitis, 86; remittent and intermittent fevers, 12; typhoid fever, 10; erysipelas, 6; diarrhœal diseases, 7; cerebro-spinal meningitis, 1. An aggregate of 319.

Of these 319 deaths, at the least one-half of them, or more than 150, would not have died but for defective drainage. The sickness rate of the diseases represented by these deaths added to the prevalence of rheumatic affections, from which there were no deaths reported during the four weeks taken, and, considering the rarely fatal result of intermittent fever, may be fairly estimated at not less than 3500; and probably fully that number from the same causes throughout the year. Defective drainage, therefore, may be set down as the cause of not less than one-fifth

[1] Read before the Society and referred to the Committee on Hygiene of the State Society, Dec. 16th, 1873. A. N. Bell, M.D., Jerome Walker, M.D., E. S. Bunker, M.D., G. W. Baker, M.D., and R. M. Buell, M.D., Committee.

of the total mortality of Brooklyn; for November cannot be regarded as a particularly favorable month for these deductions. These conclusions are, for the most part, based upon the investigations of Dr. H. I. Bowditch, of Massachusetts,[1] and the researches of Dr. George Buchanan, of England,[2] in regard to other localities. That intermittent and remittent fevers, rheumatic affections, neuralgias, croup, quinsy, diphtheria, pneumonia, pleurisy, bronchitis, cerebro-spinal meningitis, erysipelas, typhoid fever, and diarrhœal diseases are due to this cause no less than consumption, will hardly be called in question. Scarlet fever and measles are also well known to be promoted and aggravated by, if not, indeed, often due to, the same cause. Moreover, it is evident to all observers that damp soils add to the danger of filth accumulation by soakage, and that such soils above all others are likely to become excrement-sodden, and the air and water polluted. It is with this appreciation that Pettenkoffer insists upon humidity of soil as a necessary factor in the etiology and local outbreak of both cholera and enteric fever. But of consumption, the most universally prevalent and the most uniformly fatal of all diseases. According to Dr. Buchanan's investigations, wherever the drying of the subsoil had been effected, either by the construction of drain-sewers or by special drains and deep storm culverts, when the system of surface drainage was completed the mortality of consumption had decreased in some large communities 50 per cent.

In Salisbury, for example, after surface drainage, the death rate from consumption decreased 49 per cent.; in Ely, 47; Rugby, 43; Banbury, 41; and in thirteen other towns there has also been a remarkable diminution, although not to the same degree.

2. *How many acres of marsh lands have you in your county?* The area of marsh lands in this county can be more conveniently measured by miles than acres. One single line of it, measured by the coast from Spring Creek on the north side of the town of New Lots to Fort Hamilton, is about 40 miles long, and will average not less than 4 miles wide, comprehending an area of over 100,000 acres. The next most extensive area is that of

[1] Annual Discourse, 1868, and Fourth Annual Report of Board of Health, Massachusetts, 1873.

[2] Annual Reports of the Medical Officers of the Privy Council; and Wilson's Hand-Book of Hygiene, 1873.

Newtown Creek and adjacent marshes, about 3 miles by 1—or, say, 2000 acres.

The ponds and swamps of the town of New Utrecht. These aggregate about one square mile—640 acres.

In the town of Gravesend, there is one large pond and adjacent marsh of about 640 acres. In Flatlands one—the remnant of an old millpond—of 3 or 4 acres.

In Flatbush, "Ripley Lake," and four smaller ponds communicating, comprehend about 640 acres of stagnant water, and this is the receptacle for the sewage of the county institutions.

Within the city limits, just south of Greenwood Cemetery, there are about a dozen ponds, comprehending at the least 60 acres. Making in all of natural defective drainage, over 103,000 acres. To this estimate may be added the *artificial* defective drainage of the city, due to the progress of public works—the laying of water and sewage pipes and street grading—these improvements (?) having been made, and at present progressing, without any regard whatever to the public health. Old water-courses and low lands are crossed by impervious causeways and the water dammed up into numerous stagnant ponds. These exist in some parts of the city in parallel rows of several blocks in extent, as, for example, between 5th, 4th, and 3d avenues; and over the area of Newtown Creek and tributaries, where two large sewers empty into stagnant creeks, more than half a mile from the river; and the same creeks are also the receptacles for most of the slaughter-house drainage and several factories—all depending upon the ebb and flow of the tide to sweep out the excrement-sodden soil!

3. *Have you intermittent diseases not attributable to marshy deposits, but to soil saturation?* Unquestionably, and chiefly on account of the peculiar nature of the soil throughout the county. The annual rainfall in this county is about 44 inches. The surface layer of four feet thickness, of ordinary dry and porous soil, will hold about one-half of its bulk of water before any drains off; consequently the same layer may, by attraction, hold half of the rainfall for the whole year. But the superficial soil of King's County is *not* such ordinary dry and porous soil. It consists of clay and fine sand, in such proportions and under such circumstances as to form, in many places, and sometimes over large areas, dense, impervious layers, known as *hard-pan*. There are sometimes two or three of these layers, varying in thickness from

a few inches to a foot or more; and in depth from within a foot of the surface to more than six feet. On the hill-sides the layer of hard-pan usually exists within two or three feet of the surface, dips down into the valleys in thicker and denser layers, and there forms tight bottoms for stagnant water. So prone is the composition of the soil to this condition that the artificial ponds, those made by the progress of public works within the city limits, speedily acquire water-tight bottoms in the same way—by the washing out of clay and fine sand from the surrounding higher grades; and these so-called "sunken lots" being left, not only as the receptacles of the water drainage around, but also as the designated dumping-holds of house and street garbage, become veritable marsh lands, eking out disease and death to all who reside in the neighborhood of them at the present, and the foundation of unhealthy dwelling places for many years to come.

4. *Are there in your county places where intermittent fever has disappeared as a result of systematic drainage of the surface saturation?* A prominent example exists in the vicinity of Prospect Park. The whole region of the Park, comprehending over 600 acres, was, previous to drainage, notoriously malarious; scarcely a family escaped autumnal intermittent. It is now an admirable specimen of systematic drainage and water circulation, and intermittent fever in its immediate neighborhood is rare. Also, as an apparent consequence of systematic pond drainage now in progress in the town of New Utrecht, where intermittent fever is said to have become, at least, considerably less prevalent. At any rate, such is the experience of physicians practising in that neighborhood. The storekeepers of New Utrecht facetiously complain of the Drainage Commission for injuring their business in the sale of quinine, which, until recently, was an article of considerable profit to them.

5. *What system of drainage is necessary to render your county free from malarious diseases?* The soil saturation of the county of Kings is chiefly due to two widely different causes, and of necessity requiring different processes of drainage.

First, that which has already been described, comprehending both the natural and artificial defective drainage—the *impervious nature of the soil.* For the effectual drainage of this a systematic application of both tile and drain-pipe is necessary; the tile to relieve the surface, and pipes to conduct the water from the ponds. Incidental to this system and to economize it, there will be neces-

sity for the penetration of deep layers of *hard-pan*, trenching hillsides for the interception of the water in its descent to low bottoms, and other contrivances which readily suggest themselves to any sanitary engineer. For the artificial defective drainage, that which has been created by carelessness and incompetency in the progress of public works within the city limits, *porous-pipe* or *tile-drainage* will for the most part answer the purpose; but some stone-drainage, of such strength as to sustain heavy structures, is also necessary. And for health, economy, and efficiency, soil-drainage should proceed hand in hand with all sewer-mains whenever and wherever laid.

Second, soil saturation in consequence of its low level, having no adequate outlet, water-logged. This condition probably applies to over 50,000 acres, which for the most part extends inland from the coast. The effectual drainage of this soil involves the construction of embankments, canals, and sluices, and windmills or other machinery to raise the water to such a level, and to convey it to such points as will admit of its discharge. It is by the elaborate use of such means that the valleys of Switzerland are rendered so fruitful and salubrious, and the rich pastures of Holland redeemed from the sea. The progress of population will, ere many years, justify the same elaborate system for the redemption of market gardens on Long Island out of the marshes, at present reserved for the cultivation of intermittent fever and the promotion of many other diseases.

As an aid to remedy the evils above represented, your Committee recommend that a special committee be appointed to prepare and submit to the Society a draft of a mandatory law on drainage, and that the Society use its influence to secure the passage of such a law.

A. N. BELL, M.D.,
Chairman.

The recommendation of the Committee, in regard to a drainage law, was, by resolution, adopted, and the subject referred back to the Committee on Hygiene, in conjunction with Dr. B. A. Segur, Sanitary Superintendent. At a subsequent meeting of the Society a draft of such a law was adopted.

COUNTY OF NEW YORK.[1]

The special subject under consideration, drainage, must be regarded, by all interested in questions of health, as of the greatest importance.

The terms drainage and sewerage are too often used indiscriminately.

Drainage presents a problem entirely distinct in its character and uses from sewerage.

In the settlement of any new territory the question of its drainage is of the first importance. Sewerage may only become a subsequent consideration.

The health of the individual, as of the community, depends upon the proper drainage of the soil, while the question of sewerage awaits the force of circumstances.

A water-saturated soil cannot be dwelt upon with safety; proper drainage is of vital necessity to its permanent occupancy.

Drainage is that system or method by which superabundant water may be removed from the soil, which has or may become saturated. It may be by natural or artificial means, or by a combination of both.

The natural topography may be such as to require but little aid from art in perfecting the drainage of a section of country, while, on the other hand, art alone may be able so to drain it as to render it healthy.

Therefore, the first consideration presented in the selection of a site for human occupancy, involves a study of its topography; and, incidental thereto, its substratum or geological formation, in order that whatever system of drainage may be adopted, its effectiveness and economy may harmonize. Natural watercourses, assisted by art, often afford the best means for ridding saturated soil of its superabundant water, and should never be lost sight of in any artificial adaptation.

Too often an ignorant interference with nature's provision and law in this respect, has brought untold misery upon future residents. "Water will not run up hill," and "always finds its lowest level," and unless it finds an outlet, natural or artificial, will stagnate. A lamentable example of this ignorance occurred

[1] Read before the Society, and referred to Committee of State Society, January 26, 1874. Moreau Morris, M.D., C. P. Russel, M.D., Aug. Viele, M.D., E. H. Janes, M.D., S. A. Raborg, M.D., J. C. Peters, M.D., Committee.

but a few years since, at Seventy-fifth Street and Third Avenue, where some builders permanently obstructed a natural water-course, and caused the overflowing and saturation of more than fifteen acres of soil that had been drained by it previously, poisoning almost every individual dwelling within a circuit of several blocks, and producing many deaths, among them the instigator of the measure.

The erroneous and unfortunately popular idea that filling in earth upon a water-saturated soil precludes the necessity of deep drainage, has produced permanent evils in many sections of our country, that at the present day it is almost impossible to remedy.

No statistics, illustrations, or arguments are any longer needed to convince the medical profession of the unhealthiness of water-saturated soil for human habitation.

A very large proportion of human ailments can be traced directly or indirectly to this influence. Even a water-saturated atmosphere directly tends to increase mortality and sickness among the enfeebled, as the mortuary statistics of the county during the recent long-continued foggy atmosphere abundantly testify. But mortuary tables exhibit only a small proportion of the influences of water-saturation, for we should not forget the uncollected and uncollectable statistics of diseases due to the same cause. The State Committee has well said, "drainage is the work of primary importance throughout the State."

New York County, until a very recent date, was bounded by Harlem River and Spuyten Duyvil Creek on the north, New York bay on the south, East River on the east, and Hudson River on the west, presenting, in its general outline, a parallelogram, with more or less pointed ends.

Its geological and topographical formation is so well described by Gen. E. L. Viele, in his report to the Board of Health for 1870 upon "Sanitary Engineering," and his remarks are so apropos to this report, that the paragraph on "drainage" is quoted entire. "It is a well-established fact, that the principal cause of fever is a humid, miasmatic state of the atmosphere, produced by the presence of an excess of moisture in the ground, from which poisonous exhalations constantly arise, and carrying into the system of those who inhale it a virus which, if not sufficiently intense to produce fever, has such a disturbing effect upon the functions of some organs as to weaken the general system and

act as a powerful predisposing cause of some of the most common and fatal maladies to which the human body is subject.

"It follows, as a matter of course, that the first effort to improve the salubrity of any place whatever, should be directed toward preventing the aggregations of water in particular localities, and to remove such as has been allowed to collect.

"In order to illustrate this subject of drainage, let us examine it in connection with a district of country where the surface is in a perfectly natural condition, unaltered or unaffected by any artificial improvements, diversified by hills and valleys, the elevations and depressions forming the water-sheds and water-courses by which the ground is partially relieved of the excess of rain which falls upon it.

"The evaporation which is constantly going on under the influence of solar heat upon the waters of the ocean and of the land, carries into the atmosphere large quantities of water, which, through changes of temperature, becomes condensed, and descends again upon the earth.

"But a small portion of that which is annually discharged from the clouds is necessary to vegetation, or is absorbed by the ground. A portion of it passes off on the surface into the rivulets and rivers, and thence to the ocean.

"A portion descends through the soil by the force of gravity until it meets with an impermeable substratum; flowing along this stratum, it either accumulates in hollow basins, or diffuses itself through extensive tracts of subsoil, finding vent in the shape of springs; or, by spreading itself over a large mass of soil, it saturates it as a sponge, rendering it unfit for cultivation, creating marshes and swamps, whence arise the malaria so destructive to health.

"These are visible effects; but there is another condition by means of which this surplus water is rendered injurious to vegetation and to health. As soon as a portion of water is beneath the surface, it is acted upon by capillary attraction in addition to the force of gravity, the tendency of which is to hold it in suspension, whereby the soil becomes soured and chilled by the evaporation, which carries the water off in the shape of mist, so that even in those sections of country where there is no evidence of marshes or swamps, the nature of the soil may be such as to render it extremely unhealthy.

"As the sanitary condition of any city or district of country is

so intimately connected with its proper drainage, and the latter is so dependent upon and governed by the topography of the locality, it would appear requisite that any inquiry into the causes or remedies for sanitary evils existing in the city of New York should be based upon a thorough knowledge of the topography of the island upon which it is built; and I have no hesitation in expressing the opinion that one of the chief causes of mortality is to be found in the defective drainage of certain districts of the city; and furthermore, that this is an evil which is increasing as the city extends itself towards the northern portion of the island, and that the main elements by which the evil is increased are the so-called city improvements, or grading of streets and avenues, which are now being carried forward.

"Geologically, the island of New York is a metamorphic rock or granitic gneiss, whose originally horizontal planes of lamination have been disturbed and thrown up into an almost vertical position, with protruding veins of primitive granite.

"An extremely irregular surface has thus been formed, ranging in elevation from 0 to 150 feet above tide-water, and interspersed with numerous valleys, through which originally flowed many drainage streams, some of them of large size, receiving their supply not only from the surface drainage, but also from innumerable perpetual springs, percolating through the planes of lamination. In most of these valleys are drift deposits, and there are many instances where sedimentary deposits of clay have formed basins impermeable to water, which has accumulated in permanent ponds.

"This city, like all great cities of the world, owes the selection of its site more to chance than design; and its rapid growth from a village to a populous city has been the result of circumstances unforeseen, and therefore unprovided for. The streets and avenues of the lower part of the city are the lanes and by-paths which formed the connection between the trading houses of the olden time. Neither these nor the subsequent system of streets adopted for the upper portion of the city have been laid out with any regard whatever to the topography of the island; but on the contrary, from their character, conflict at every step with the original formation; and from this conflict there has arisen an accumulation of evils calling imperatively for the application of remedies which are daily becoming more necessary, and which are daily becoming more difficult.

"Without recurring to the fact, which is constantly becoming

more apparent, that in the densely occupied portions of the city, where there has been, from the first, a total neglect of the all-important matter of drainage, there are plague spots and fever-nests which exist in the vicinity of old obstructed drainage streams, which no sanitary regulations can eradicate, and which require the most careful and unceasing vigilance to prevent the spread of epidemics, which an unfavorable condition of the atmosphere is always certain to create.

"For this purpose I have caused to be made a careful examination of that portion of the city lying between Fiftieth and One-hundred-and-thirtieth Streets, the East and North Rivers, and a map has been prepared showing 'the area of water saturation' embraced within those limits, and it is believed that an effectual application of the necessary remedies can now be applied without difficulty, if done promptly. But every day the progress of population, the extension of streets, and erection of buildings increase the obstacles, which have to be removed, and will, in a short space of time, be insurmountable, except at an enormous expense, and thus place that fairest portion of the city in the same condition as certain districts of the down-town wards above referred to, which are left to the exclusive habitation of the lower orders of population.

"Referring to the present condition of this section more in detail, it will be seen that along the lines and original courses of all the original drainage streams there have been placed, in the grading of streets and construction of dwellings, numerous obstacles to the free flow of water through its original channels.

"The consequence is an accumulation in different localities of deposits of stagnant water, which in itself is not only detrimental to health and productive of epidemics, but by reason of accumulation it causes the saturation of an extensive area of ground, permanently unfitting it for building sites, since no house can be located within this area of saturation without being affected by dampness to a greater or less extent.

"The result is that any change of temperature in the apartments of these houses must produce a condensation of the moisture which is ever present in these departments by virtue of capillary attraction, which has caused it to ascend from the saturated earth on which the house is built. The very heat with which the occupants of houses so situated seek to draw off this dampness only aids in the end the capillary force which is

always at work. As a result of this disregard of nature's simplest laws, and under a criminal combination of ignorance and neglect, we have constantly present the various forms of intermittent and typhoid fevers, consumption, scrofula, and all the diseases attendant on the atmospheric conditions which are due to this source." . . . . .

Respecting the causes which are in operation by which these streams are made the sources of disease, he enumerates "grading streets and avenues across the valleys of natural drainage," without making provision by the construction of culverts for the passage of water in its natural bed, "filling up low lands with earth, sometimes refuse, garbage, and other material causing a permanent deposit of decomposing organic matter, which for all time remains to add a fetid character to the damp exhalations which arise," and "making use of natural streams for sewage of all kinds;" a notable instance of which is furnished by one of our public hygienic institutions, "the Bloomingdale Lunatic Asylum, situated upon the high ground between Tenth and Eleventh Avenues, near the Hudson River, and with a rapid descent to the river, instead of taking advantage of its favorable location, and constructing a drain to the river, has made use of a stream originating near the institution as a receptacle for all its liquid refuse. This stream passes along the line of Tenth Avenue to One Hundred and Twenty-fifth Street, where it meets with low swampy ground, and empties into a pond at the junction of One Hundred and Twenty-fifth Street and Tenth Avenue.

"In the neighborhood of this pond, fevers of a malignant type have prevailed for years; scarcely an inhabitant within the radius of half a mile has escaped its deleterious effects." Other instances he enumerates equally striking in their effects upon the health of the inhabitants. So well has General Viele's report described the evil effects of this defective drainage, the causes of its obstructions, and the necessity for efficient remedies, that but little can be added. The sanitary necessities seem to be so imperfectly understood among civil engineers generally, that much credit is due to this gentleman for having combined with his knowledge of civil engineering the most important consideration—healthy occupancy. In the laying out of railroads, highways, canals, or other internal improvements, through any section of country, natural drainage streams are constantly

obstructed, and stagnant ponds formed, which inevitably poison the *inhabitants dwelling adjacent to them.*

To the first proposition of the Committee of the State Society, to wit:—

"To what extent are the diseases of your county due to insufficient drainage?" may be answered, that, for certain classes of diseases, it seems to be the almost exclusive cause. In the upper portions of the county, lying above Fifty-ninth Street, for many years past, fevers of an intermittent, remittent, and typhoid character have been constantly prevalent. A fact so well recognized by the medical profession of the city and county as to prompt the question, on visiting a patient suffering with any of these forms of disease, "have you been visiting Yorkville or Harlem?"

With recent improvements in respect to drainage and sewerage in parts of this territory, these diseases are becoming less frequent; yet so many undrained portions still exist, in connection with acres of "soil-saturated areas," that some years must elapse before the sources of these fevers will be entirely removed.

These fevers occur, not alone among the immediate resident population of these undrained districts, but the same malarious influences are unquestionably felt by those dwelling in far more salubrious quarters. The Central Park presents, within its borders, during the spring, summer, and fall, so many attractions in its well-graded drives and walks, its cool, refreshing breezes, its boating, its provisions for children's sports, its embowered retreats, and its ever-changing variety, that multitudes of all classes of our citizens are wont to avail themselves of its pleasures. Are its picturesque lakes and ponds free from that insidious malarial poison? Is there no danger lurking beneath its umbrageous shades, after the sun has removed his protecting influence? When our citizens are taking their evening rides, or seeking the refreshing, cooling atmosphere of its grassy lawns and shady groves, after the enervating heat of our summer solstice, day by day, clad in their thinnest garments, can we wonder that many suffer from these poisons, which, beyond a doubt, exist there? Too many examples, personally known, attest the fact.

Other sections of the county, within the built-up portions of the city, suffer from undrained areas, and the obstructed courses of now hidden streams in those sections bounded by Twenty-third

and Fifty-ninth Streets, west of Fifth Avenue; Houston to Twenty-third Street, east of Second Avenue; and portions of the 4th, 6th, and 7th wards. The following mortuary statistics from the records of the Bureau of Vital Statistics of the Health Department, show to what extent these diseases have proved fatal during the years 1871, 1872, and 1873, over these undrained portions of our county :—

	Remittent fever.	Intermittent fever.	Typho-malarial.	Congestive chill.	Total.
1871	165	110	12	1	288
1872	193	111	22	12	338
1873	164	86	19	8	277

a total for the past three years alone, of 903 deaths from diseases which might have been avoided by a proper and adequate system of drainage. Truly a warning lesson for our health department, which has now ample and exclusive authority over this matter.

These death records afford but a faint idea of the amount of suffering entailed upon the unfortunate inhabitants of these insalubrious sections.

Who can collate the statistics of the sickness, misery, and impoverishment among the inhabitants who may have partially recovered, or who sank under some other named disease to a silent grave, victims of civic and unsanitary neglect?

2d. How many acres of marsh lands have you in your county?

Of marsh lands there are but few, and these are confined principally to the marginal portions of the northern part of the county, where but a sparse population at present dwells.

Of water-saturated areas there were about 5000 acres, of which 2500 have been thoroughly drained during the past two years, leaving about the same number of acres still undrained. To the Health Department is committed the responsibility of securing this much needed reform, and one of its chief duties in the conservation of the public health, is to apply the only efficient remedy. The Department of Public Works is its executive arm, but cannot execute without its order. Drainage is the great prophylactic for the prevention of the malarious diseases of this county.

3d. Have you intermittent diseases not attributable to marshy deposits, but to soil saturation?

To this question it may be answered that it is hardly possible distinctly to draw the line. The marshy deposits are but few,

and, as a rule, the areas of soil-saturation south of the line of Fifty-ninth Street are limited in extent, and have been so long filled in and covered with buildings and paved streets, that it is scarcely possible to verify any doubtful data. Again, the class of population covering these areas is of that character, as a rule, which are subjected to so many unsanitary conditions in their domestic relations, that mortuary statistics avail nothing regarding this question.

Perhaps, in general terms, it may safely be said that as squalor and filth find congenial abodes in damp and unwholesome places, it appears to be more than a coincidence that these may be found dwelling over the marshy and soil-saturated portions of the marginal and lower portions of the city.

4th. Are there in your county places where intermittent fever has disappeared as a result of systematic drainage of surface saturation?

As systematic drainage has been so recently introduced in this county, and that to so limited an extent, it cannot be affirmed that intermittent fever has disappeared entirely as a direct result. But sufficient information has been elicited in a portion of the county lying between Seventy-second and Ninety-second Streets, east of Fifth Avenue, where there have been efficient subsoil drains constructed during the past two years to warrant the assertion, that this and like forms of malarious disease have already remarkably diminished in frequency. Diligent inquiry by one of your Committee, whose sanitary district as a health inspector includes this section, among the profession practising therein, and among the residents with whom he is more or less familiar, has convinced him that these diseases are now becoming quite exceptional, and many of them may be attributed with justice to malarial influences other than those formerly existing at this point. The change has been marked and popularly noticeable.

Until the whole northern portion of this county is brought thoroughly under the beneficial influence of a thorough system of deep subsoil drainage, it can hardly be expected, with the exposure that a large proportion of the up-town population are obliged to undergo in their daily passage through undrained districts, that these malarious diseases will entirely disappear. But with a thorough drainage of all the water-saturated areas of those sections of the county, there can be no question, that these preventable diseases must cease.

That portion of Westchester County which has so recently been amalgamated with this, contains very great areas of undrained land, and has been for years notorious for its malarial diseases, but want of time, so recent has been this addition to our county, compels us to omit any description or statistics concerning it, no public records being available for the Committee.

5th. What system of drainage is necessary to render your county free from malarious diseases?

Respecting drainage in its proper acceptation, it is that system which is so constructed and adapted that it will effectually remove all of the water not necessary for vegetation.

So small a portion of this county is devoted to agriculture, really confined to market gardening, and so large a portion is now or will, in a very few years, be occupied by dwellings or other buildings adapted for business purposes, that the question of the proper system of drainage to be applied becomes one of the highest hygienic importance.

Certain sections need to be drained by an independent system, so constructed that it shall receive all surface water which percolates through and saturates the soil of low lands, or those lying below the levels of street sewers, and carry it off to the rivers on either side. The drains should be made to follow, as far as may be practicable, the original watercourses, which generally have their origin in the central portions of the island, running easterly or westerly into the marginal rivers on either side.

They should be constructed of stone, having a good flag bottom and top, but with uncemented sides, through whose interstices the water could readily pass; or in some instances, earthen-pipe, and brick drains, having open joints at intervals, may be substituted. A combination of these has been found to work admirably in some places during the past two years. This system is necessary to the removal of water from water-saturated areas and marshy lands.

The combination of a drain and sewer is admissible where a sufficient depth can be secured for both in the instances where it may be economy to construct them at one and the same time, and where perennial springs or the bottom of an extensive water-shed may render both necessary. This is done by having the bed-plate of the sewer pipe adapted for drainage by leaving the joints open, thus presenting a continuous drain below the sewer pipe, which

itself must necessarily be a tight pipe to convey without leakage the sewage for which it is required.

This county is so nearly covered in all its extent by dwellings and other buildings, inhabited by a teeming population of a million or more people, that, in view of its present and future welfare, its drainage and sewerage systems are of the utmost importance.

So intimately are they connected with every sanitary relation of the body politic, or of the social household, that the Committee cannot, in view of the magnitude of the evils and the danger to health incurred by defects in the construction and adaptation of either, avoid laying before you some facts in relation to the sewerage as it exists at the present day throughout this city and county.

Although sewerage is not properly and distinctively the subject called for by this report, yet the two systems as they exist in most instances throughout this county are more or less connected together, a fact which should be well understood by the medical profession.

For since a drain should be constructed in such manner as to allow water to flow freely through its side into it, so also, if any obstruction takes place within, the water will flow out of it, saturating the adjacent earth. If, then, a sewer is made to connect with a drain, the sewage may also pass out and saturate the soil, thus adding a tenfold danger to health. Hence sewers and drains should never be made interchangeable; but the former may be used as outlets for the latter beyond the immediate area which they affect when there is a proper grade for the purpose. The objection to a sewer discharging into a drain as before mentioned should prohibit such use.

Numerous instances of this defective and dangerous condition now exist throughout the older built-up portions of our county. As a consequence, malarial, typhoid, or some other specific form of fever not unfrequently results, whose origin or source it may be difficult to discover. Old drains become forgotten in the lapse of time, or by change of owners; but plumbers and builders often find them in excavating for cellars, and not unfrequently make use of them to save the expense of direct sewer connection. Such examples have been discovered in a number of instances during the past few years by the health officers.

One notable instance in Fifth Avenue, between Nineteenth and Twentieth Streets, was discovered, where three dwellings were

connected with an old forgotten drain, which beyond question was the cause of death of a lady by typho-malarial fever in one of these premises. Another in Third Avenue, near Fifty-seventh Street, where six tenement houses were sewered through an old drain passing through one of the cellars. In these houses frequent cases of fever had occurred previous to this discovery. A change having been made to a direct sewer connection, resulted in making these healthy habitations.

Again, in Fifty-fourth Street, near Third Avenue, a row of six "French flats" had all their waste-pipes and sewers discharge into an old watercourse drain that passed beneath one of the cellars. This old drain also passed across and underneath the street, and its sewer, through the bottom of the cellar of a tenement house on the corner of Third Avenue and Fifty-fourth Street, some two hundred feet distant, and thence into the sewer in Third Avenue, at a level so low that its outlet frequently became the inlet for the filthy sewage flowing through the Third Avenue sewer. Consequently this cellar was frequently overflowed with this sewage, as well as that from the houses connected with the drain upon the opposite side of Fifty-fourth Street.

The remedy in this instance was by compelling the owner to cut off this drain connection and make direct sewer connection with each house.

Underneath the elegant mansions upon the east side of Fifth Avenue, between Fifty-seventh and Fifty-eighth Streets, originally coursed a natural stream, which, becoming obstructed by street grading, had caused a very large area to become saturated or water-logged. The builder constructed a culvert under the cellars, providing for its flowage through them, but beyond the outer wall of the building, no provision had been made for its further progress. As the result proved, there must also have been some sewer connected with this old watercourse; for when a proper deep drain had been constructed to provide for its outlet, the workmen were compelled to leave their work for half a day while the water and sewage ran off, so intolerably offensive was its character. The indwellers of these houses had been suffering unwittingly from this cause, which by proper drainage is now entirely removed.

At the corner of Seventy-seventh Street and Fourth Avenue, the German Hospital was constructed directly over an old drainage stream, which was entirely disregarded and overlooked

in laying the foundation wall. Malarial poison, undoubtedly from this source, so universally affected the patients, that it was in serious contemplation by its trustees, at one time, to abandon its use for hospital purposes. So universal was the fact that patients entering it contracted malarial disease, that it became the ordinary practice to administer quinine to its inmates as a prophylactic almost immediately upon their admission.

The construction of a deep drain through these bottom lands, extending from Seventy-third Street and First Avenue to Eightieth Street and Fifth Avenue, on the line of which this hospital stands, relieved it and all that saturated area of its excess of water and dangerous malaria.

In Sixty-fifth Street, near Fifth Avenue, during the construction of one of these deep drains, on nearing the foundation-wall of two elegant brown-stone dwellings, it was discovered that underneath their sub-cellars there existed a large quantity of stagnant water, the result of previous soil-saturation; this being the low ground, originally, of a considerable extent of water-shed area, just at this point. Into this saturated soil the builder had constructed the foundation-walls, and then filled in with earth under the sub-cellar, with the vain idea that it would thereby become dry, and that no more water could get in through or under these walls. These dwellings had been occupied but a very short time previously, and consequently the ill effects of this condition had not yet been developed.

In the square bounded by Fifty-fourth and Fifty-fifth Streets, Madison and Fourth Avenues, where the natural soil was below the level of the street sewers, it had become saturated and marshy in consequence of obstruction to the natural flow of a streamlet, by the grading of the streets and avenues. Upon this block eight brown-stone dwellings had been built and occupied.

The residents were compelled to abandon them after a few months' occupation, on account of continued illness with malarial fevers.

An examination respecting the cause, revealed the fact that beneath the sub-cellars there existed a large quantity of most offensive stagnant water, which, upon being properly drained off, restored these dwellings to a healthy condition. Many other instances might be given did time and space permit.

Previous to the year 1870, there existed no law by which any proper system of drainage could be enforced or applied in this

county. The investigations respecting the causes of the very great prevalence of fevers of an intermittent, remittent, and typho-malarial character in the upper portions of our county, led to the inevitable conclusion that the remedy was in a large measure by a comprehensive and proper system of drainage. Attempts were made by the Board of Health to attain this object by compelling each owner of a lot to build a drain across it; but this plan was found to be utterly impracticable, as some owners would comply, while others were indifferent, or objected, or could not be discovered; thus but a partial and limited result only could be obtained.

Recognizing the immense benefit to be derived, and the absolute necessity for some adequate authority whereby continuous deep drains could be properly constructed from the source of the water supply, to its legitimate outlet, the Chairman of this Committee prepared and secured the passage of the following law by the State Legislature during the winter of 1870 and 1871, since which time, nearly eight miles of these deep subsoil drains have been constructed above Fifty-third Street. (As may be seen by reference to the map.)

"Chapter 566, Laws of the State of New York, 1871. An Act to provide for the proper drainage of lands within the corporate limits of the City and County of New York, passed April 19, 1871.

"Sec. 1. Whenever it shall appear to be necessary for the protection of the public health that any part or parcel of land within the corporate limits of the City and County of New York needs to be drained by other means than by sewers, and it shall be so certified by the City Sanitary Inspector, and said certificate is filed among the records of the Board of Health of the Health Department of said city, the said Board shall direct that the same be done by and under the direction of the Department of Public Works of said city and county.

"Sec. 2. All parts and parcels of land lying below the levels of the sewers adjacent thereto, upon which surface water remains stagnant, or through which watercourses have or at present do run, may be so drained by a properly constructed blind drain, which shall be carried along such natural watercourse until it can be made to enter any sewer at its proper level, or if such sewer cannot be reached, it shall be carried to the adjacent river.

"Sec. 3. All lands benefited by said drain directly or indi.

rectly, for a distance from said drain included between the adjacent streets and avenues thereto, shall be liable to assessment thereon *pro rata* in proportion to the direct or indirect benefit derived from the construction of said drain, the assessments to become a lien upon the property assessed, as in like cases provided."

Under the operation of this law it will be observed that the Board of Health have complete and ample authority to cause all the drainage to be done which may be necessary throughout this county.

This law completely meets the want so long felt in securing proper drainage of soil-saturation, and by a simple modification by the Legislature can be made to apply to any county in the State.

Under its provisions the present engineer in charge of sewers in the Department of Public Works, Stevenson Towle, Esq., has applied his abilities in carrying out its intent with rare intelligence and a thorough understanding of its great value as a sanitary measure in protecting the public health; and he has succeeded with the Commissioner of Public Works in placing under contract one of the most extensive works of the kind yet attempted in this county, if not in this country. This contract, already commenced, provides for four thousand feet of drains between Second and Third Avenues, Ninety-second to One-hundred-and-fourth Street, which drain all those tidal marshes lying within these boundaries. In order to perfect this drainage, these tidal marshes are to be filled in with earth above tide level; the drains and sewers to be constructed upon a solid foundation of piles driven into the bottom lands. This contract has been awarded at the cost of one hundred and thirty-eight thousand dollars.

Other contracts have also been made for draining of marshy lands overflowed by tides, lying between Third and Fifth Avenues, from One-hundred-and-third Street to One-hundred-and-sixth Street.

The completion of these contracts will result in ridding the northeastern portion of the county of the tidal stagnant ponds and saturated marshy lands that have for so many years been the great drawback to all improvements in that section of the county, and where malarial poison has so long prevented its occupation. It will also add millions to the value of this real

estate. Like all great hygienic works, this drainage has been quietly but surely progressing in our county during the past two years, and future generations will bless its projectors for this prevision. The only drawback to the results that must follow this great sanitary measure is the fact that our health authorities have permitted, and still quietly submit to the filling in of the marshy lands lying east of Second Avenue to the East River, with the most objectionable matter that could possibly be devised, viz., the street dirt, ashes, garbage, and refuse of all kinds taken from the streets of the city.

Wherever these drains have been constructed through areas of saturated soil, or in removing obstructions from and restoring old watercourses, the land has become dry, and, from being pestiferous, uninhabitable localities, has become attractive and desirable for building locations and residences, thereby appreciating its value many fold. The diseases previously so prevalent are rapidly becoming extinct.

It may be confidently asserted that whenever this drainage system becomes perfected, our county will be free from those malarious influences that have so long been its bane. The general surface outline of this county presents the most admirable topographical arrangement for the adaptation of a perfect system of drainage, having a general central elevation sloping towards the rivers on either side, thus presenting the natural grades so desirable for this purpose.

Again, the interminable network of sewers which are in almost every street and avenue afford abundant outlets for short and comparatively inexpensive drains by which to remove the water from low saturated sections that have been hitherto entirely neglected.

In conclusion, your Committee cannot but express their conviction of the great importance of this subject, not only as regards the future hygienic welfare of the citizens of this county, but also those of every county within the State, and most heartily concur with the State Committee on Hygiene, "that the work of primary importance throughout this State is *drainage*."

Respectfully submitted.

MOREAU MORRIS, M.D.,
Chairman.

ONEIDA COUNTY.

ONEIDA COUNTY is located near the centre of the State, and although it is the summit-level of the *Erie Canal*, it is lower than that part of the State immediately west.

Drainage is effected to the north and west into *Lake Ontario*. To the south by the sources of the *Susquehanna*, and to the east by the *Mohawk River* and its tributaries. The surface is hilly, and varies in elevation from 200 to 1000 feet above the Mohawk River.

The soil is a fine quality of sandy and gravelly loam and aluminum, well tempered with lime and gypsum.

It embraces 1215 square miles, about 100 of which are low, marshy land, and at times overflowed. It is a county exceedingly well drained and free from malarial diseases, having had, as far as data can be collected from the several *physicians*, 78 cases of *typhoid*, and 48 cases of *spinal meningitis* during the year. No correct information of the cases of *intermittent fever* obtainable.

The *Erie Canal* passes through the county from *west* to *east*. The *Black River* Canal crosses the county diagonally from the *northeast*, and enters the Erie at Rome. It is in this section, and with the inhabitants living in the vicinity, that malaria chiefly prevails. Since the construction of the canals the *sewerage* of the towns and cities upon their borders has been emptied into them, until they have now become the grand *cesspool* of the *State*. Their waters constantly saturate the soil, spread out and issue in the form of slimy nuisances in the cellars of the inhabitants. The foul exhalations from this, combined with those which constantly arise from the canal—thickened by the discharges of many sewers—are, as we all know, exceedingly poisonous, conducing to sickness and death. It is not saying too much when we declare these emanations to be more potent than all other causes combined in breaking down the health of the people.

There is no locality in the county where these sad results are so constantly observed as in the city of Utica—a city, the surroundings of which are noted for their beauty, and the situation one that an engineer would desire for competent drainage; but, from ignorance or mistaken economy, sewers that should, when constructed, have been deeper and carried under the canal and thence into the *Mohawk River*, have been allowed to disgorge their contents into the canal; and quite recently, to add to this

execrable policy, the city *fathers* have directed a large sewer to be made, terminating in a small creek, quite a mile from its mouth, running through the west and thickly-inhabited part of the town, where, in the dry weather of our sultry months, the inhabitants are obliged to inhale the pestiferous atmosphere; and so injurious have become the waters, that mills, which have been for years accustomed to use the stream in cleansing of wool, are now compelled to abandon it.

In Rome and Verona, drainage is accomplished with great difficulty. The *Erie Canal* passes through both, and soil-saturation is constant.

The main tract of the marsh lands in Rome extends nearly across the town, and lies directly south of the present channel of the Erie Canal. Much of this has been greatly improved by drainage. Wood Creek flows westerly, and passes under the new Erie Canal by a *culvert* a mile west of the City of Rome.

This *culvert* is the main impediment to a perfect drainage of all this wet land. It is too small to allow a free passage of the water after heavy rains and thaws. Could the culvert be enlarged and lowered about five feet, and the old canal bottom cut to a corresponding depth, the whole swamp would be drained and greatly improved.

The only practical system of drainage for the *City of Rome* also depends on this improvement. No other convenient outlet can be obtained for *sewers*, which, since the introduction of water into the city, is now much needed for the health and cleanliness of the city.

SAMUEL G. WOLCOTT, M.D.,
Chairman.

RICHMOND COUNTY.

The Committee would premise by expressing full concurrence with the resolution of the standing committee, that the work of drainage throughout the State is of primary importance. But here in Richmond County, it is vastly, pre-eminently so, and upon its accomplishment, more than any or all other means, depend the healthfulness, welfare, and prosperity of this island.

1. To what extent are the diseases of your county due to insufficient drainage?

Not less than one-half, and in many portions four-fifths of the prevailing diseases are either directly caused or seriously aggra-

vated by the malign influences resulting from insufficient drainage.

2. How many acres of marsh lands have you in your county?

There are about three thousand acres of salt marsh, and probably at least one thousand acres of stagnant ponds and malaria-generating marshes, besides large tracts of tenacious clayey soils.

3. Have you intermittent diseases not attributable to marshy deposits, but to soil saturation?

We frequently observe intermittent and other malarial fevers in locations quite distant from any marshes. Especially is this the case in Northfield and Westfield, where there are large tracts of flat, clayey lands, with but few ponds or marshes, but yet whose inhabitants suffer to a very great degree from miasmatic fevers. And also, on the higher grounds of Middletown and Castleton, where ponds and marshes are less numerous, but whose rocky, soapstone underground basins and clayey soils are retentive of much moisture, intermittent and other fevers are, at times, very prevalent.

4. Are there, in your county, places where intermittent fever has disappeared, as a result of systematic drainage of the surface saturation?

There are but few instances in this county where the experiment of systematic drainage has been tried on a scale sufficiently extended to determine its sanitary value. Owing to the fact, that in all such instances the drained districts continue to receive malaria from the adjacent undrained territory, the full benefit of the measure has not been secured. But in each and every case, it may be confidently stated that a marked amelioration of health has resulted, highly confirmatory of the sanitary advantage of thorough drainage..

5. What system of drainage is necessary to render your county free from malarious diseases?

Nothing short of thorough drainage of our stagnant ponds and marshes, and water-soaked soils, can relieve us from the malarious diseases from which we now so greatly suffer. To accomplish this end, it would be necessary, first to straighten, deepen, and free the channels of all natural watercourses; secondly, to open the outlets of all ponds and marshes to a depth sufficient to drain them two or more feet below the lowest portions of their beds; and thirdly, to thoroughly underdrain with suitable tile all saturated tenacious soils. Such watercourses as pass through villages

and populous neighborhoods should be converted into closed sewers, and be provided with proper house connections, etc.

We are confident that such a system, well completed, would be attended with a vast improvement of the public health.

Respectfully submitted,

W. C. ANDERSON, M.D.,
Chairman.

J. L. MILLSPAUGH, M.D., *Secretary.*

January 28th, 1874.

TIOGA COUNTY.

Tioga County has an uneven surface, abounding in hills and valleys, well improved by thrifty farmers, containing comparatively but little waste land, and is free from "marshes," with the exception of, perhaps, a hundred or two acres in detached pieces, which are located near streams of water, and are formed by living springs, and do not generate malaria.

The southern part of Tioga County is drained by the Susquehanna River, famed as well for its beauty as for its connection with Indian history, running in a westerly direction; while several minor streams take their rise in the northern part of the county and empty into this at various points, forming delightful valleys in their course; adding charms to the beauty of the landscape, as well as giving variety and richness to the native soil, which is one of a sandy or gravelly loam mostly, that fits this region admirably for grazing or dairy purposes.

The supply of water in all parts of the county, both by brooks and living springs, is most abundant, and of a healthy and pure quality.

Drainage in some places might be useful for agricultural purposes, but is not demanded from sanitary considerations.

Surface-saturation here does not enter into the cause of disease so far as this Committee possesses any knowledge.

Tubercular disease here is rather rare to individuals born and raised in this county, while it seems to be rather common in the counties lying north of this.

The range of high lands running east or west, or nearly so, forming the water-shed between the St. Lawrence and the Chesapeake, in the northern part of Tioga, seems to render our climate a little softer and a trifle milder than that of either Cortland or Cayuga.

Fevers are not specially incident to this climate or location, yet they do occur occasionally, and sometimes assume a typhoid type.

The Susquehanna valley, with its morning fogs in summer, may possibly favor the development of such forms of disease as asthma, rheumatism, neuralgia, and catarrhal and laryngeal affections; yet, prevalent as they seem to be, the Committee do not feel to be justified in assuming that this is the case, and would add that these fogs prove a real blessing to the luxurious vegetation and varied productions that occupy her rich alluvial till late in the fall, and make this spot the Eden of the Empire State.

In conclusion, we would venture the opinion that no poison contained in either land, water, or atmosphere, militates half so much against the health of this—and, indeed, too many other communities—as the common one daily imbibed with the alcoholic stimulants used for a beverage by numerous individuals, and all, too, under the sanction and approval of venerated Law!

While the medical profession has laid science under rigid contributions to search out the hidden and subtle causes of disease lurking invisibly in the elements, and has done much to ward off and to protect the people against their otherwise destructive effects, we are sorry that her united voice, in condemnation of this dangerous and altogether useless practice of the voluntary imbibition of one of the worst poisons known to chemistry, considered with reference to its evil consequences both upon the physical and moral man, has not been oftener raised or more effectually heeded.

J. B. BENTON, M.D.,
E. B. PHELPS, M.D., } *Com.*
C. L. STILES, M.D.,

January 13*th*, 1874.

TOMPKINS COUNTY.

FIRST, THE TOWN OF ULYSSES.—The town of Ulysses is remarkably exempt from marsh lands and intermittent diseases.

1. We rarely have disease from insufficient drainage.
2. We have comparatively no marshes in our town.
3. I doubt not that some of our fevers are due to soil-saturation.
4. Intermittent fever cannot be considered endemic in this town,

as we rarely have it except in persons who have imbibed the malarial poison elsewhere.

5. Does not require an answer.

Yours very truly,

J. M. FARRINGTON, M.D.

The foregoing report from the town of Ulysses is correct, not only for that town, but is substantially so for the whole county, except the village of Ithaca and its immediate vicinity.

1. To what extent are diseases of Ithaca due to insufficient drainage? Ans. To an appreciable extent.

2. How many acres of marsh lands have you in Ithaca? Ans. Nearly 800 acres.

3. Have you intermittent diseases not attributable to marshy deposits, but to soil saturation? Ans. Yes.

4. Are there in your county places where intermittent fever has disappeared as a result of systematic drainage of the surface saturation? Ans. Yes; localities that were subject to agues in the first settlement of the county are now generally exempt from it.

5. What system of drainage is necessary to render your county free from malarious diseases? Ans. The necessary drainage is not easily accomplished. An efficient system contemplates the lowering of Cayuga Lake about three feet, or rather that the lake should be kept permanently down to about the same level that it is now usually in midsummer.

The obstacles that exist to widening and deepening the channels for the passage of water from Cayuga Lake are great; but in view of the vast importance of the work, may be considered practicable.

We are impelled to ask this of the State from the fact that in building, enlarging, and filling the Erie Canal, a large amount of water is made to flow into the outlet of the lake above the aqueduct, and thus back upon us, which had a natural channel in other directions. State works have injured much more than they have helped us as regards malarial influences. For ourselves, *partial* drainage and filling up low lands is our only resource. The village of Ithaca would, without doubt, be benefited by having two more well-constructed sewers, extending from the East hill to the inlet. Through these much water, and, no doubt, some impure water would flow off. These sewers we recommend to

our authorties, but we think that, in our peculiar situation, we should not be satisfied with only improved sewerage. Our soil is not, all of it, badly saturated with water, but upon perhaps every lot in our village there is an accumulation of animal and vegetable matter through which the rainfall percolates, and, no doubt, renders the water used by the inhabitants to some extent contaminated and unwholesome.

That sickness and death are caused here, in some instances, by this impure water, is an evident fact; every observing physician here knows this. And inasmuch as our sewers cannot be made to flow into either running or tide-water, something else must be suggested.

I propose the following:—

1. Municipal authority must attend to the construction, disinfecting, and cleaning of privies throughout our village. Where earth-closets are used, proper daily attention to them should be enforced. Health officers should attend to the construction of privy vaults, so that no water should pass through them to reach those veins of water from which water is used for domestic purposes. They should attend to removing night soil by the newly invented pneumatic process, or some means which avoids poisoning the atmosphere.

2. Our authorities should not only attend to the removing, and, perhaps, utilizing of night soil, but everything else that can contaminate or pollute our air or water.

S. P. SACKETT, M.D.,
Chairman Committee on Hygiene, Tompkins Co. Med. Soc.

CAYUGA COUNTY.

1. To what extent are the diseases of Cayuga County due to insufficient drainage?

In answer to this question it is assumed as settled, that all malarial diseases are due to insufficient drainage, and in this sense an approximation to a correct answer to the question may be arrived at by comparing the number of cases of malarial disease in the county for any one year, with the whole number of cases of diseases of all kinds. The Chairman of your Committee, while physician to Auburn Prison, kept regular monthly tables of the cases of disease occurring there. These tables, for the year ending September 30th, 1872, show that 36 per cent.

were of malarial origin. In the absence of any other available statistics, this record is taken as a basis of calculation. In taking it, however, we must consider two facts: 1st. The prison premises are fairly drained, and are surrounded by high walls; 2d. There are no women or children included in the prison population—the former fact would diminish the amount of malarial disease, while the latter would also diminish the relative amount of other diseases, and, to a great extent, perhaps, counterbalance the objections to the prison records, and still leave these as approximately a basis of calculation for the county. In some parts of the county the proportion of malarial disease is much less than in the prison, while in others there is far greater. We say, then, that from 30 to 40 per cent. of the diseases of the county are due to insufficient drainage.

2. How many acres of marsh lands have you in your county?

There is no survey of the county containing this particular. There is no record anywhere of facts in this respect—our town supervisors can only guess about it—neither the State nor National Census has anything on this point. To show the shameful condition of all official statistics as to the lands of the county, it is only necessary to state, that for the purposes of taxation the State government takes Burr's Atlas for its guide. This authority gives the acreage of the county at 414,678 acres, and there are assessed for taxes 413,597 acres, leaving but 1081 acres for roads. To test the correctness of this, the number of miles of road in one town of average size were roughly measured on the county map, giving about 60 miles; 25 towns give 1500 miles of roadway for the county, and, at three rods wide, there would be six acres to a mile, or 9000 acres of roadway in the county. The State Census of 1865 gives the acreage of the county at 421,062 acres, or 6384 more acres than Burr's Atlas. Notwithstanding the error and confusion, and omission of official statistics, an estimate is ventured of the amount of our swamp lands. Bordering the Seneca River, which crosses the northern part of the county from west to east, is a belt of swamp land, ten miles long, and about on an average three-quarters of a mile wide on each bank of the river, amounting by this estimate to some 9000 acres. In the towns north of Seneca River, there are some nine ponds and small lakes, all more or less bordered by swamps. In the south towns there are the swamp lands at the head of Owasco Lake—the Bear Swamp so-called—a swamp in the town of Sum-

merhill, and several small swamps. Is it too much to say, that these together will equal one-half the amount of swamp land bordering the Seneca? If it is not, this would give the swamp acreage of the county at 13,500 acres, and it, probably, is not less than 10,000 acres, or about one-fortieth of the whole of the county.

3. Have we intermittents attributable to surface-saturation?

Undoubtedly we have; for they occur in many parts of the county where they can be attributable to no other malarial origin. This is more true of the northern part of the county than of the southern. The general character of the south towns being that of a high roll of land between lakes, admitting of speedy natural drainage and less surface-saturation, while the north towns are more level.

4. Are there in the county places where intermittent fever has disappeared as the result of systematic drainage of the surface-saturation?

There has been no systematic surface-drainage for health purposes in the county. There has, however, been a great deal of both marsh and surface-drainage for agricultural purposes; and there has been also a very great diminution of intermittents in all the districts where this has been practised. In the Seneca River district the State Government has been engaged for years in removing obstructions from the river, which has had the effect of largely draining the Montezuma Marshes, as they are called, and there has been a very great diminution of intermittents in that district. It used to be a proverb in the county, that anybody who slept one night at Montezuma would have the fever and ague to pay for it. A resident of Howland's Island, in that vicinity, an intelligent and educated man, says that there is not one case of intermittent fever now in that section where there used to be a hundred before the marshes were drained; not meaning, perhaps, to be so literally understood, but as stating a very marked and striking difference. From all parts of the county, where tile-draining of farm lands, carrying off surface-saturation, has been adopted, intermittents have diminished and in some sections disappeared.

5. What system of drainage is necessary to render your county free from malarious diseases?

In all parts of the county but one it is only necessary to clear the natural outlets (viz., the watercourses) of obstructions, and

open by ditches the swamps into them and tile-drain the lands into the same outlets; but the Seneca River and Erie Canal district, which are virtually the same, presents natural difficulties which render this result only partially attainable. This is a belt of land the lowest in the county, and nearly level. The deepening of the enlarged canal has partially drained these lands, and the improvement of the Seneca has had the same effect; but the bulk of these lands lies so low in reference to these two sluggish outflows that effective and perfect drainage of them is unattainable, especially when it is also the fact that the Seneca receives nearly all the rain-fall of our county as well as of several counties west of us, and is therefore subject to overflow. For this district, wherever tile-drainage is impracticable, open cross-ditching will give all the relief attainable.

THEODORE DIMOND, M.D.,
Chairman of Com. on Hygiene, Cayuga Co. Med. Soc.

DISCUSSION.

Dr. BELL.—Mr. President, your Committee invited Gen. Viele, of New York, to be present, and I am happy to say he is here. He is practically more familiar with defective drainage in New York and vicinity than any other person.

GENERAL VIELE, on being introduced, said: I have attended here to-night at the request of your Committee on Hygiene, but I feel a little delicacy, not being a member of the Society, in introducing any views of my own, preferring to hear the subject discussed by the members of the Society.

Circumstances have, for a number of years, forced upon my notice the important facts connected with public hygiene. While on active service in the Mexican war, and several years' service on the southwestern frontier, as also during the last war, I passed through a number of violent epidemics. First, that of yellow fever at New Orleans and Vera Cruz; afterwards, that of cholera in its most malignant form, in 1848, as well as innumerable cases of dysentery and typhus fevers. In many instances being without the services of a physician, I was frequently thrown upon my own resources, and, of course, my powers of observation were necessarily quickened by the responsibility of the situation. I naturally sought for a preventive rather than a cure; sought to remove the cause of the disease rather than hoped to find a

remedy. In this way I came to learn that damp localities promoted sickness, and dry localities promoted health. I found that wherever epidemics and other diseases were most fatal there was sure to be moisture in the ground and miasma in the atmosphere. And I will here remark that during my military service I found the utmost pleasure and profit in my intercourse with the officers of the Medical Department of the Army; and I learned through them to honor that profession which I regard as the first of all the learned professions, if for no other reason than for the grand humanities that surround it. In civil life, my profession as an engineer has brought me in closest contact with this subject, hygiene. In laying out the Central Park, New York, and Prospect Park, Brooklyn, besides providing numerous plans for drainage, sewerage, and water supply, as also in laying out cemeteries, I have found that the basis of all plans of public improvements is *complete, thorough*, and *permanent* drainage! I have found that public works in too many instances have been obstructive of drainage, and that, as a consequence, the public health has paid the penalty. The city of New York is a sad instance of past neglect in this matter, as is also the city of Brooklyn, and so it is all over the State. Those splendid rivers that water our State and bear its produce to the sea: the Hudson, the Mohawk, the Delaware, Susquehanna, Alleghany, and Genesee, with their thousand tributaries, have been obstructed in their courses, to meet the demands of industry and manufacture, to such an extent, that to the soil-saturation of the mill ponds has become due an enormously large proportion of the periodical diseases and annual deaths. The only remedy for this state of things is either to remove the dams or compel a proper construction of the reservoirs where the water is stored, so that no vegetable matter shall be present in contact with the water, to produce miasma. As a general rule these ponds are drawn down in the middle of the day, when the sun is at its meridian, and the vegetable deposits, decomposing in the beds of the ponds and streams, are exposed to the direct action of the rays of the sun, producing in the air almost as sure a poison as the subtle compounds of the chemists. Our public works or canals and railways have been constructed in too many instances with a reckless disregard of sanitary laws, and are often sources of disease by the obstruction they have made to the free flow of water. All these matters, gentlemen, require supervision and correction, and where

can the public look except to the medical profession for instruction and advice? I trust that the interest that is now being awakened in sanitary science will increase year by year, until its vital principles shall become familiar to all; and I trust that your profession and the one that I represent may be always found ready to co-operate in the good work.

Dr. GUERNSEY, of Dutchess Co.—At the last annual meeting of our County Society, the circular which I hold in my hand was presented to the Society, and a committee appointed to take the matter into consideration.

It was too late at the time to make any extended report, but I hope I may be indulged in making a few remarks. Our Society appreciates the importance of this matter, and I would, on its behalf, say, that I hope the matter will not be allowed to rest until the country districts are relieved from some of the evils of imperfect drainage. In the city of Poughkeepsie, at one time, there were 1200 cases of intermittent fever, caused, I am led to believe, wholly by the damming up of the streams; since the lakes and swamps were drained, there has been scarcely a case. But throughout our country towns, I have met with a large number of typho-malarial cases, not in the vicinity of large rivers, and which, I have no doubt, are caused by the stopping up of the mill-streams. These mill-owners dam up the streams, and the villages in the vicinity of such streams always have a large number of cases of typho-malarial fever; and if the State Medical Society can influence the Legislature upon this subject, they will do an immense deal of good, and will receive the thanks of the people throughout the State, who are suffering from these causes. In the eastern part of the county we have a large number of mill-owners, and a proportionally large number of cases of typho-malarial fever. But there is another fact that I have observed: As we approach an elevation of fifty feet above the level of the sea, we have typho-malarial fevers, and when we get as high as seven hundred feet above, we have typho-malarial fevers also. Now, what has elevation to do with it? I am glad the State Medical Society has taken this matter in hand.

Dr. AGNEW, of New York.—I think we should not rest until a sanitary map, on the plan of that before us, shall have been made of the whole State. Of course, I do not mean a mere topographical map, but one showing the areas of undrained land, the areas of zymotic diseases, and every other feature relating to the

preventable causes of disease. We should not rest, moreover, until we have obtained from the Legislature what are known in England as "enabling" acts, by which any town or city may avail itself of sanitary experiences and control. I think the time has come for acting. The Committee, which has just reported progress, having received from twenty counties sanitary reports, should be strengthened and encouraged to go on. I believe that the work of the Committee will not only diminish the sickness rate materially, but also add greatly to the material wealth of the State. I have been over much of the State, and therefore learned its topography. I have observed in every direction the preventable causes of disease. Among the many such, none have impressed me more than those which are connected with the drinking-water supply in small towns and among farmers generally. It is an established fact, that an ordinary well will drain an area of from one hundred to two hundred square feet; and yet it is a common thing to see a farmer—in most other respects intelligent and discriminating—drinking from a well into which drains the refuse of the barnyard, the pig-pen, and the sink. Medical men could very largely correct this cause of disease as they go on their rounds of practice, by pointing out the danger.

If we, in our daily professional work, keep in mind our possible ability to correct such evils, we may do much good even before the Legislature gives us the aid we need. We can cultivate public opinion in sanitary matters, and place a force behind our legislators which they will cheerfully yield to. We may then expect that sanitary laws will be obeyed, because sustained by intelligent public opinion.

Dr. GRAY, of Utica.—Dr. Wolcott has shown that the authorities upon which we ought to depend, in carrying out any efforts we might make as a profession, have utterly failed to co-operate with us. The history of sanitary science shows that the people are utterly regardless of advice. Remonstrances have been made in every form, but every influence in regard to abolishing the present system of foul sewerage has seemingly failed. It occurred to me, after hearing Dr. Morris' report, that probably the simplest form of applying the remedy would be to apply the law referred to, with certain modifications, to the whole State. If we get up a law that is complicated, and go about the matter with a good deal of circumlocution, we shall utterly fail. If there are any objectionable features in it, the Boards of Supervisors will be

very likely to point them out. Boards of Supervisors, as a general thing, have very little regard to the health of the community, and still less respect for the opinions of medical men. I think this is the opinion of medical men all over the State. It occurs to me we must have some central power vested in a board, or in an engineer, who shall have entire charge and control of drainage for health, as the State Engineer has control of the canals. We should have some other authorities than Common Council-men and City Fathers, who are constantly subject to change, and are, as a general rule, entirely indifferent to the causes of disease. If the Society would appoint a committee consisting of members who have given their earnest attention to the subject, to represent it before the Legislature, I think some progress might be made in furthering the sanitary interest and welfare of the whole State.

I remember some eight or nine years ago, in our Orphan Asylum, I was asked to go up and see some sick children. The majority of them were sick with malarial fever, and several of them had died. I went home that evening, and on returning the next morning I made an inspection of the grounds. I found a number of piles of decayed vegetable matter, and also a stream, partially covered in its course with undergrowth and rubbish, running through the grounds. On examining the water in the well it was found to be in a foul condition. I took some of it home with me, evaporated and tested it, and found in it large quantities of organic matter. This stream ran within about sixty feet of the well, the barnyard being nearer. We agreed simply to drain the water from the grounds into this stream, which we cleared of rubbish, and I think there has not been a case since. The asylum was erected upon one of the highest plots of ground in the vicinity, still it was undrained. Upon the grounds were to be found large deposits of quicksand, similar to those described by Gen. Viele, where the water was retained. During the early history of the institution we had typhoid fever and intermittent; we had also malarial diarrhœa.

The stream is open, running through from the back part of the farm, and some eight miles of drainage is carried into it from every direction; since that period all that class of disorders have disappeared.

Dr. SNYDER, of Montgomery Co.—We have had a good deal said in relation to the sanitary commissions of cities. All very

proper; but I wish to add a little in regard to what has been said in regard to the law for the sanitary condition of the country as well. It is well known that Montgomery County is nearly in the central part of the State. It is a healthy region in general, but in many places where the Erie Canal passes through the valley, by the defects of that work a good many little marshes are created. In those locations we find intermittent and remittent fevers still lingering and prevalent. They could all be prevented if we had a law compelling drainage.

I will speak now of typhoid fever. It appeared to an alarming extent in the town of Amsterdam some two or three years ago. It is a small and growing town, and is situated upon a rocky foundation; all the houses are built upon the surface with no system of drainage, and in this portion of the town particularly, the prevalence of typhoid fever was very great.

But, as regards the country, there is another prolific source of typhoid poisoning, and it is a matter that I hope will receive attention. In our County Society a committee has been appointed, but no report has been prepared, as the time was too short. These fevers arise, in many cases, from the bad location of cheese factories; here there is a large amount of vegetable and animal matter constantly accumulating, and no drainage. I know of one factory in particular, on quite a hill; on one side of it is the Erie Canal, and on the other a large extent of water. During the whole season a very disagreeable and unhealthy stench arises, and at times it is perfectly intolerable. I think I have traced typhoid fever to persons who carried milk to the factory, and one in particular, of a promising lad who was taken down; the disease ran its course rapidly, and he died—he was my patient.

Last spring I was called upon to attend a family which had been taken with the fever; an old gentleman and wife, each eighty years old, died of it.

The buildings were in a splendid location for drainage, but I found, just below where the privy was constructed, a small pond into which it drained. On investigation, I ascertained that the proprietors were in the habit of driving their cows to this pond every night for water. I attribute the whole of the fever to the drinking of the water and milk, poisoned by decayed matter. About three weeks ago I was called to see a family with a case of diphtheria. The case went along rapidly, and it baffled the efforts of myself and two other physicians whom I called, and

every adult member of the family died. Two of the little ones recovered. This house was built partly against a side hill, and the drainage was very imperfect; water ran down the kitchen floor during every rain storm, and into the cellar, and I have no doubt that these deaths were the result of the defective drainage.

The President, Prof. E. M. MOORE, of Rochester.—I did not intend to say one word this evening, but I have been too intensely gratified with the report to let it pass without adding my little mite. I think the time has come when we should take action in this matter. I must say candidly, that I was hardly aware how far it had got, and it seems to me we should appoint a committee with power to take the whole subject up, with a view of presenting it to the Legislature. The remarks of Dr. Agnew suggested a thought I will throw out; it is this—that we might take advantage of the experience of other countries. England has already had abundant experience on this subject. The time has come for action, and this action, if properly directed, will result in the greatest possible good. I entirely agree with the remarks of Gen. Viele, that we must have full power to do this.

I hope we will not pay any attention to the Board of Supervisors at all. These bodies are simply created out of the governments of towns, and we must look toward some other and better source of accomplishing what we seek. The grave danger of appointing commissions is so plausible that I need not enlarge upon it. Who is the average man that makes up a Common Council? A man who looks only to self-interest, and who has been selected through influence and certain other things that we all understand; and it seems to me, we must enlighten the community in this respect, that they may give us intelligent and competent men as legislators.

Certain errors have been pointed out in the system of drainage, etc., in the several towns, by Dr. Gray and others. It is the same in my own town. Now, our town had an advantage in the start, which many did not possess. We were particularly fortunate in commencing the town in the middle of a black ash swamp — so that it was impossible to live there unless we drained it. In 1828 it was worse than in New Orleans. But when we adopted a system of drains, the very next year, the difference in the mortality was so plainly to be seen as to astonish all, and at once a system of drainage was adopted. I am sorry

to say, we have gone through a certain period of growth in regard to our drains; we kept pulling them up and putting down larger ones, I suppose on the principle of natural selection. Let me speak now for a moment of an absolute fact. A few years ago—in 1866 it was, if my memory serves me right—the whole community was astonished and terrified with the thought that the cholera was sweeping along the whole country. Our people became thoroughly alarmed. We had not an abundance of water, and it being spread out very much, it was difficult to procure a sufficient supply. The consequence was, that our water supply was from running water and wells. As a matter of course, it would be a system of water-closets—a system of privies. The town was thoroughly aroused. The Board of Health, under the law as it now stands, is a mere erection of straw, made up, as a general rule, of corner grocerymen. I went before that Board, and I am happy to say the result was most gratifying.

The authorities went to work with a will, and in a very short time our town was thoroughly cleansed. *We had not a single case of cholera*—not one; and my remarks to-night would have very little point if we had had one. But as time went on, and we came to compare the death-rate, we found it was reduced almost one-half. It extended through several diseases, so that cholera was not the only disease whose spread was thus prevented.

I would suggest the appointment of a Committee to take this thing up, and try to influence legislation upon the subject so intimately connected with the welfare of the State. We should begin at once, and I must confess that this evening has been one of the most pleasant that I have ever spent in my life, as an earnest of what is destined to be accomplished in this most important question in relation to our profession.

Dr. SHERMAN, of Ogdensburg.—There has been considerable said in relation to the health of towns and cities being impaired by insufficient drainage of privies. I could occupy the Society for a considerable time, if I were so disposed, in giving cases where it was positive that fevers were the direct result of drinking water contaminated and poisoned by the drainage of privies. In one family there were five cases of scarlet fever and one death. You will, no doubt, be surprised to hear that the well and privy were both in the wood-shed, and only six feet apart. I warned the head of this family over and over again of the consequences which would surely result, but he paid no attention to my warn-

ings until the disease had appeared. I may also mention another fact showing the prevalence of scarlet fever in our town. The prevalence of scarlet and typhoid fevers was, without doubt, owing to the people drinking from wells the water of which was permeated by large quantities of animal and vegetable matter.

I need hardly allude to the school buildings, which often infest whole neighborhoods. Every one is familiar with the case in Pittsfield, where a ladies' seminary was broken up; and it was owing to nothing but the privy-vaults. If I were a member of the Board of Health of my city, I would let every one know that privies are the nuisances of whole neighborhoods, and what renders it worse is, that there is no necessity for it; and I hope while we are petitioning the Legislature, there will be an application for a law prohibiting the improper construction of privy-vaults.

It is not worth while that we appoint a new Committee, and I hope this Committee will take the matter in charge.

Dr. BELL.—We all know that there should be some obligatory power for the preservation of health. But it is very questionable whether as much could be accomplished by asking plenary power of the Legislature now, as may be by following out the suggestions of this discussion. Even among us the work has only just begun, but we have profitable reports on all sides. Dr. Sherman calls to mind the epidemic of typhoid fever in the young ladies' seminary at Pittsfield. He might have added, that the trustees of that institution kept their knowledge of the disease secret until the young ladies began to die, lest their patrons should get alarmed. The few reports in detail from the county societies show the danger and fatal results of defective drainage in various places. That we have not more of these reports is due in great measure to the circumstance, that the circular of your Committee was not sent out until after most of the county societies had held their annual meetings, and too late for the appointment of committees. But short as has been the time devoted to it, and small as has been the progress of drainage for health in the State hitherto, the facts brought out are abundantly suggestive. That the work may progress, it is eminently desirable that the medical societies of every county in the State should co-operate with this Society. And I am quite sure that I express the wish of the whole Committee, that this discussion will have the effect of awakening such an interest in the import-

ance of the subject as will impress itself upon all of our fellow-members of the county societies. If, on returning to our homes, defective drainage is taken up and thoroughly investigated as it should be, before the close of another year we shall have developed information that will extend to school trustees, to boards of supervisors, and even to common councilmen. It will be brought home to the people, and touch them in their most sensitive parts. When we teach the people that a dwelling-place in the midst of undrained soil is the abode of death; that houses with wells and privy vaults in close proximity are highwaymen under the semblance of real estate; when we point out to them certain places and dwellings that will surely kill them if they undertake to dwell therein—when we do these things, even real estate owners will appreciate the importance of drainage, for they will see the point. And it is in the power of the members of the county societies to employ these means for drainage, even in advance of their forthcoming reports. Your Committee sincerely trusts that "the time for action," so emphatically suggested by the President, will be echoed throughout the whole length and breadth of the State. I may be permitted to add that your Committee is in favor of such legislation as will utilize all the information obtainable on this and kindred subjects for the promotion of the public health; legislation giving authority to work out and demonstrate unsanitary conditions, and depending upon the intelligence of the people for a due appreciation of the benefits to be reaped therefrom.

Dr. GRAY.—I would like to inquire whether the Committee on Hygiene continues with power.

The PRESIDENT.—No, sir, it is at the discretion of the Society; if the Society so desires, the same Committee may be re-appointed.

Dr. GRAY.—I do not know that now would be the proper time, but I hope the Society will re-appoint the same Committee, and that they be authorized to receive the County Society reports, so that they may be able to present the product of the whole to this Society.

Dr. MORRIS, of New York.—I would like to say that this matter of drainage must be compulsory. I would advise that, as soon as possible, some legislation be had. My experience as chief officer of the Board of Health in New York taught me that the only way to accomplish our object was by prompt legislation.

Dr. GRAY moved the following resolutions, which were adopted:—

Resolved, That the Secretary be instructed to urge upon the county societies the importance of having Committees on Hygiene in co-operation with the Standing Committees on Hygiene of the State Society; and that the investigations of said Committees in this regard, on the approval of their respective county societies, be forwarded to the Committee on Hygiene of the State Society in time to be summarized by that Committee in their annual report.

Resolved, That the Committee on Hygiene have power to secure such legislation as in their judgment may be necessary for the promotion of the public health.

In virtue of the above resolutions, bills were introduced into the Legislature for a State Board of Health, and for proper drainage. The Committee was not disappointed at their failure to pass, for they recognized the want of due appreciation of the importance of the subject at present, on the part of legislators. The progress made, however, is very encouraging to the hope that both measures will be enacted before the close of another legislative session.

In conclusion, your chairman has not been unmindful of the special resolutions committed to the Section by the Association. On the contrary, he has given them much serious thought. But the result of his investigations and conclusions is that a National Sanitary Bureau would, at the present, be at the least untimely, if not indeed wholly impracticable for the promotion of sanitary science; that for a National Bureau to be beneficial, it is at first necessary that State Boards of Health should be general and not exceptional, as at present. That State Boards of Health are essential to the proper and profitable constitution of a National Bureau, and the only way to obtain a National Bureau consistent with a due recognition of the relations of the several States to the general government is to continue to apply our energies for the establishment of State Boards of Health, and to do all we can for the enactment of laws for the promotion of health and the protection of life.

In regard to Dr. Horner's resolutions, they commend themselves to the moral support of the Section and the Association, as declaratory of truths in accordance with the settled convictions of many of the best thinkers of the medical profession.

REPORT ON DEFECTIVE DRAINAGE AS A CAUSE OF DISEASE WITHIN THE LIMITS OF THE STATE OF VIRGINIA.

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THE chairman of the Section on State Medicine and Public Hygiene having selected, for co-operative investigation by the different members of the Section, the single subject of *defective drainage*, with the suggestion that "each one is expected to fill his own sphere," and that all should work according to a prescribed plan, the undersigned submits the following report as embodying the results of his inquiries within the limits of his own State—Virginia.

This State contains one hundred and one counties, which with reference to their medical topography may be arranged into six groups or sections, viz.: I. Counties bordering on salt water. II. Counties on tide-water above the limits of the salt-tides. III. Counties between the head of tide-water and the eastern base of the Blue Ridge. IV. Piedmont counties proper. V. Counties in the Great Valley of Virginia. VI. Western or Ohio section.

Answers to a circular letter of inquiry containing the questions prepared by the chairman of the Section on State Medicine and Public Hygiene, have been received from eighty correspondents, representing forty-nine counties, and four cities. It thus appears that rather more than half the counties in this State have failed to supply information on the subject of inquiry. But for the most part, we have reason to be assured that the delinquent counties have a similar medical topography to that of neighboring counties in regard to which more or less positive information has been given by trustworthy correspondents.

Conceiving it to be the duty of each member of the Section, who is invited to assist the Chairman in the investigation of the selected subject, not only "to fill," as far as may be, "his own sphere," but also to confine himself within the limits of that sphere, I shall scrupulously avoid all reference except by way of occa-

sional illustration, to observations made elsewhere, and all speculation as to other influences besides that of defective drainage, which may be more or less potential in giving rise to periodic and other fevers. It is a source of regret that some of the correspondents have misapprehended the scope of the first question, and instead of simply reporting what percentage of the diseases of their respective counties may be ascribed to defective drainage, have entered upon an elaborate discussion of the intimate nature of malaria aside from the influence of soil moisture as one of the principal factors in its development. A yet more general error has been the assumption that the inquiry relates exclusively to diseases of a malarial origin, and the consequent overlooking of various other morbific effects of soil moisture. It was, doubtless, in consequence of this restricted view of the subject, that but few communications have been received from the non-malarious regions of the State, and that of these few, nearly all report an almost entire absence of disease as dependent on defective drainage. For the most part, therefore, this report will relate to the influence of soil moisture in the production of malarial fevers, and other diseases which, though elsewhere arising from more general causes, are yet more or less distinctly modified in their course and indications of treatment by co-existing malaria.

I. *To what extent are the diseases of your county due to insufficient drainage?*

II. *How many acres of marsh lands have you in your county?*

It has been found most convenient to consolidate in one the answers to these two questions as received from each county.

I. COUNTIES BORDERING ON SALT WATER.

The counties of this group exhibit the following topographical features: They are not only bordered on one or more sides by bodies of salt water—the ocean, Chesapeake Bay, or large rivers near their mouths—but they are also penetrated to a considerable extent by estuaries of the bay or ocean, and by so-called creeks, subject to the salt tides. The surface, in many places quite level, nowhere rises into any considerable elevation, seldom, indeed, exceeding twenty feet. The soil is strictly alluvial, with, in most places, a substratum of sand and pebbles.

1 and 2. *Accomac and Northampton* constituting the "eastern shore of Virginia," present identical features of medical topography, and may, therefore, be treated as a single medical district.

The former includes the northern, and the latter the southern half of the low, flat, and narrow peninsula on the eastern shore of the Chesapeake Bay, extending from Cape Charles, at the mouth of that bay, to the Maryland line, in north latitude 38° 2′, a distance of about sixty miles, with an average width between the bay and the Atlantic Ocean, of about ten or twelve miles. It is bounded towards the sea by a string of low sandy islands, separated from the mainland by a belt of water of considerable width which makes in from the open sea in the intervals between the contiguous islands. The peninsula is thus indented on the east by numerous inlets of the sea, and more deeply pectinated on the side of the bay by a succession of creeks with intervening necks of land varying in length from two or three to six or eight miles. From the head of tide in these creeks, to the inlets from the sea on the east, the distance is often not more than two or three miles, and the maximum elevation of the intervening ridge scarcely exceeds ten feet. The soil is a sandy loam, which, near the creeks, rests upon a substratum of red clay, varying in thickness from a few inches to several feet. Numerous rivulets take their rise in springs scattered over the central ridge, and discharge themselves, some eastwardly into the inlets from the ocean, but much the larger number into the creeks which flow into the bay. These rivulets are the natural channels of drainage, and it is observed here, as in most of the lower counties on the western side of the bay, that the points at which the fresh and salt waters meet are the most prolific foci of malarial diseases. As such points are much more numerous on the west than on the eastern side of the peninsula, so it is observed that "at least two-thirds of the miasmatic diseases of Northampton County occur west of its central backbone." At higher points along the branches of the creeks the drainage function is, in many places, seriously interfered with by the formation of dams to get motive power for mills, in the vicinity of which the soil becomes more or less saturated, and malarial fevers prevail. Malaria is thus the most fruitful of all sources of disease in the counties of the eastern shore, and to a considerable extent it exercises a modifying influence over diseases dependent primarily upon other causes. There cannot be a doubt as to the fact that the generation of malaria in this region is largely due to insufficient drainage, and that if an effective system of drainage was in operation it would be as healthy as any country on the globe.

According to Dr. W. A. Thorn, of Northampton, "the entire sea front of the county is bordered by marsh lands for a mile or more in width, but over nearly the whole of this the tide ebbs and flows daily, and they are regarded as in no way responsible for malarious diseases." A similar statement is made by a number of correspondents who reside on salt water, and this uniform testimony from this region, with respect to the innocuousness of marshes which are "*regularly* overflowed by the sea (and not occasionally inundated)" is confirmatory of the position taken by Parkes (*Manual of Practical Hygiene*, 3d edition), who cites the evidence given by Robert Jackson (*Fevers in Jamaica*, 1791) to the effect that he had never found the neighborhood of salt marshes less healthful than the rest of the country, but, on the contrary, they were frequently more so. Dr. Parkes adds that the case of Singapore, which has created such surprise, and is cited even by Hirsch as an exceptional case, is of this kind; the regular tidal overflow, though it causes the development of much sulphuretted hydrogen, prevents the formation of malaria."

Dr. Thorn proceeds to say that "it is the swampy grounds at the heads of the creeks and in the course of the fresh water branches that are the sources of disease, and these bear a very small proportion to the area of the county, not more, he thinks, than one-quarter, or, at most, one-half of one per cent."

Dr. W. S. Stoakley, of the same county, bears witness to the fact that "the sea-coast with its long stretch of marsh and its many ponds and pools, is proverbially more healthy than the bayside, and this has been the case from the 'earliest recollections' to the present time. Another point noticeable is that the arable lands adjoining the sea-shore are not so saturated as are the bay lands and the middle section."

Dr. J. L. Harmanson, of Accomac, makes, with respect to his county, statements in singularly close correspondence with those above cited with respect to Northampton, but he also refers to the effect of the direction of the winds. "During the summer and fall, if the prevailing winds are from the east, there is but little sickness on the seaside, but much on the bay. On the contrary, if the winds at those seasons blow pretty constantly from the west, the thing is reversed. But whatever may be the direction of the winds there is always a good deal of malarial fever in the uplands. Our most healthy and vigorous men are raised in the vicinity of the salt marshes." He considers soil-

saturation as much the most fruitful source of malaria in his county. Dr. J. E. Brodwater, of the same county, estimates that 50 per cent. of the intermittents are due to the latter cause.

3. *Elizabeth City*, a small county, nearly square, of about eighteen miles to the side, is washed by Hampton Roads on the south, Chesapeake Bay on the east, and Black River on the north. Old Point Comfort is at the southeastern corner. According to census returns, as reported by Dr. G. W. Semple, there are 2405 acres of marsh lands. But, in addition to this, at least one-third of the uncleared woodland, or nearly 5000 acres, is so flooded during the winter and spring months as to be unfit for cultivation after clearing, and is so situated as to be incapable of drainage except as a whole by the combined efforts of all the owners. These wet lands are the principal sources of malarious emanations in this county. Most of the marsh lands consist of salt marshes, and these are not found to be sources of malaria. The prevalent diseases are malarial fevers, both intermittent and remittent. Pneumonia also prevails to a considerable extent, and is perhaps the most fatal disease in the county. "The fever accompanying it is always of either a remittent or an intermittent type. Sometimes the fever is as distinctly intermittent as in any case of simple uncomplicated quotidian, and in these cases the signs on auscultation reveal an increase of the extent of lung involved during each paroxysm, and a diminution during the paroxysm."

I cannot forbear saying just here that my own experience, which, however, is on a far more limited scale than that of Dr. Semple, has led me to a different conclusion as to the effect of a co-existing malarial fever on the course of a pneumonic inflammation. I have known the supervention of malarial fever to give a most unpromising appearance to a case of pneumonia, though the physical signs at the time and the succeeding phenomena gave evidence that the ordinary progress of the local inflammation had not been materially affected. I ought to add that, in these cases the observations were made in a non-malarious region, though the patients had but recently come from a malarious district where, of course, the germs of the fever had been imbibed.

Dr. Semple has observed a similar influence of malaria on the fever of rheumatism and erysipelas, and also in some cases of diarrhœa and dysentery. He thinks, moreover, that most cases of tuberculosis in his region developed about puberty "are con-

sequent on the mal-nutrition caused by frequently recurring attacks of intermittent fever," and that consumptives generally, whatever be the origin of the disease, are peculiarly liable to attacks of intermittent fever, which hastens the fatal progress. All these results may thus be referred to malarial influence due to insufficient drainage.

4. *Gloucester County* lies between the York River on the south, and the Piankatank on the north, and has for its eastern boundary Mobjack Bay, a broad estuary of the Chesapeake. It is also penetrated by three broad and deep estuaries, improperly called rivers, being really so many arms of Mobjack Bay. They extend for a distance of several miles into the interior. They are bordered by salt marshes which being regularly overflowed by the salt tides are, to a great extent, innocuous. A line drawn north and south through the heads of these waters marks out the natural division of the county into lowlands and highlands. At this point numerous fresh water streams run into the heads of these estuaries, meeting and mixing with the salt water, which appears to favor the evolution of malaria. On these fresh water streams in the highlands of the county numerous mill ponds have been constructed. In many places the ponds cover an area of from forty to fifty acres of water surface with wide borders of marshy lands. The general elevation of the surface of the lowlands will, perhaps, not exceed four or five feet above high-water mark, while that of the highlands averages between twenty and thirty feet. The whole county is of the tertiary geological formation, with extensive beds of marl of the miocene, pliocene, and plisocene periods, underlying the surface soil at a depth of from one to seven feet in the lowlands, and from seven to forty feet in the highlands. The soil of the lowlands varies from a light sandy loam to a dark, stiff, clayey sand, and calcareous, alluvial loam. The lands bordering on the York and Piankatank Rivers are more sandy and dry than the lowlands or than the intermediate highlands, but they are penetrated by creeks of from one to three miles long, at the mouths of which bars of sand are formed by the more powerful tidal currents in the large rivers, and these impediments prevent the free entrance of the tides, as a consequence of which an imperfect salt or brackish water is produced, which, like that of the mill ponds, becomes partially stagnant, and thus a fertile source of malaria. Not only the periodic fevers, which are the prevailing diseases of the county, but almost all

its diseases are largely dependent on insufficient drainage, and the most fatal forms of zymotic diseases owe their malignancy in a great measure to the same cause.

I am indebted for the foregoing accurate description of the medical topography of Gloucester, which in its main features will also apply to most of the other counties of this Section, to my colleague Dr. J. R. Page, now professor of Agriculture and Natural History in the University of Virginia, but for many years a resident and practitioner of medicine in that county. He is unable to specify the number of acres of marsh lands, but states as his conviction, that all the marsh lands of Gloucester are capable of being drained and made both profitable and salubrious, except the salt marshes, which are already innocuous.

5. *Mathews* is a peninsula extending into Chesapeake Bay, and thus almost completely surrounded by salt water of the Chesapeake, Mobjack Bays, and the Piankatank River. It is moreover indented by numerous creeks or estuaries of the bay dividing the land into as many narrow necks. Its surface is almost uniformly level. Dr. T. B. Lane, of Mathews C. H., reports that there are about 3000 acres of marsh lands regularly overflowed by the salt-tides, and that they are not unhealthy. At present the whole county is considered to be very healthy, and is resorted to even in summer by health-seeking invalids from both north and south. At one time, many years ago, a part of the county bordering on the Piankatank River was regarded to be so unhealthy that owners of slaves to be hired out stipulated that they were not to live in that part of the county. But drainage, chiefly by open ditches, was resorted to, and to a very considerable extent malarial diseases disappeared.

6. *Norfolk County* lies south of Hampton Roads, and the contiguous part of Chesapeake Bay, and is separated from the Atlantic Ocean, on the east by the intervening narrow county of Princess Anne. A large part of the celebrated Dismal Swamp lies within the limits of this county, and gives rise to several streams, one of which, the south branch of Elizabeth River, runs northeastwardly to the main body of that river. Dr. G. Christian reports that "there are about 800 acres of marsh lands (exclusive of the Dismal Swamp), but more than half of this is inundated daily by the salt tides, and is comparatively innocuous. The remaining portion where salt and fresh water commingle is mias-

matic." A large percentage of the diseases of the county are of malarial origin, and probably due to insufficient drainage.

7. *Norfolk City.* Dr. H. M. Nash reports that there are probably one hundred acres of marsh lands within the city limits. Dr. R. B. Tunstall states that "we have in *and around* the city perhaps two hundred acres of marsh lands." Dr. Nash expressly excludes those marshes within the city limits which are daily overflowed by the tides, as these, he says "are considered by us to be innocuous." Surface drainage has hitherto been almost exclusively used, and, the streets having been graded without regard to any definite plan, the drainage has been very defective.

The mortuary statistics of the city for the year 1873 show the number of deaths from diseases that may be ascribed in part to insufficient drainage:—

Diseases.	Whites.	Colored.	Total.
Intermittent, Remittent, Typho-malarial, and Pernicious Intermittent fevers	8	13	21
Typhoid Fever	4	11	15
Cerebro-spinal Meningitis	2	1	3
Consumption	30	39	69
Pneumonia	10	24	34
Bronchitis	4	10	14
Pleurisy	1	2	3
	59	100	159

In addition to the deaths recorded in this table there were two others which might be conjecturally assigned to the same class, namely, one from *hæmoptysis*, and one from *hydrothorax*. The total number of deaths reported for the city and the immediately adjacent villages of Berkeley and Atlantic City was 614, the aggregate population being about 21,000, giving a death-rate of 29.2 per thousand of the population. This high rate is accounted for by the fact that nearly one-half of the population consists of negroes, who rarely employ medical assistance. With a population nearly equally divided between the two races, the excess being in favor of the whites, there were 392 deaths among the blacks to 222 among the former. Most of the deaths from typho-malarious, pernicious intermittent, and some of the remittent cases, occurred at the Marine Hospital among sailors admitted from vessels from the North Carolina Sounds, or from James River, and not among the citizens. Doubtless a large proportion of the other deaths recorded in the table, as well as of

the numerous cases of disease which these deaths represent, may be charged to the account of defective drainage. This view may be held with especial confidence with respect to the cases of typhoid fever occurring in a locality where, as in Norfolk at present, no provision is made for sewerage apart from surface drainage.

8. *Princess Anne* has the Atlantic Ocean for its eastern boundary from Cape Henry in the north to the North Carolina line. The northern portion slopes north to Lynhaven Bay, the western to the eastern branch of Elizabeth River, and the southern to Back Bay and Currituck Sound. Dr. A. G. Tebault reports that "quite a large fraction of the area of the county would come under the designation" of marsh lands, of which, however, salt marshes form perhaps the greater part. I infer from the general tenor of Dr. Tebault's communication that malarial fevers form a considerable percentage of the diseases of his county, but inasmuch as he has misconceived the scope and purport of the first question, there is no direct statement on this point. He discusses the question as to the extent to which malaria may be due to moisture or to other causes. He concedes that moisture is in some degree necessary to the generation of malaria, though not of itself sufficient.

9. *Westmoreland* is one of the counties lying between the Rappahannock and the Potomac Rivers, a region commonly designated as the "Northern Neck." It is skirted along its entire length on the north by the Potomac River, but only touches the Rappahannock for a short distance near the western end of its southern border, the county of Richmond intervening elsewhere. Between it and that river, though separated from Chesapeake Bay by the county of Northumberland, it is within the limits of the salt water region. It is penetrated transversely by numerous watercourses, most of which discharge themselves into the Potomac. Most of these are wide and deep, and navigable for several miles into the interior. They abound with oysters and other salt water productions. The soil on the Potomac and its tributaries consists of a rich, argillaceous, loamy mixture. That on the Rappahannock contains a larger measure of sand. The middle lands are more sterile, but more perhaps from a former exhausting system of cultivation, than from original deficiency, for in many cases it has been reclaimed by clover and pasture. It is the native county of Washington, of the Lees, and of President Monroe.

Dr. R. Sanford states that in his opinion "intermittent and re-

mittent diseases have increased four to one since the close of the late war," which fact he ascribes to defective drainage. From the best information available he estimates the marsh lands at about 8000 acres.

10. *York County* extends from the Chesapeake Bay along York River for a distance of about thirty miles from its mouth, occupying thus nearly the entire length of the narrow peninsula between that river and the lower James, from which latter it is separated by Warwick and James City Counties. Its medical topography is very similar to that of Gloucester County on the opposite side of York River. Dr. W. H. Shield, Jr., of Yorktown, reports that "the prevalent diseases are intermittent and remittent fevers, and paludal influence modifies and complicates almost all diseases of this Section." He adds that "there is evidently great want of drainage, but in the absence of 'sufficient' drainage, the connection between this fact and the prevalence of malarial fevers is a mere matter of speculation, so far as this locality is concerned." About six per cent. of the entire area, say 5000 acres, consists of marsh lands. This includes the salt marshes.

II. COUNTIES ON TIDE-WATER, BUT FOR THE MOST PART ABOVE THE LIMITS OF SALT WATER.

In these the surface becomes more rolling with alternations of hill and dale, though much flat and marshy land skirts the rivers, which are generally sluggish and liable to obstructions from felled timber, drift wood, etc., with consequent overflow of their banks and of the surrounding flats. In general, however, enterprise and capital would suffice to effect a perfect drainage, and to render lands, now purchaseable at a most trifling price, extremely valuable on the score of both salubrity and productiveness.

11. *Alexandria County and City* embrace that portion of the old District of Columbia which was retroceded to Virginia in 1847. This small territory, lying on the south side of the Potomac for eight miles, contains, according to the report of Dr. R. C. Powell, at least five hundred acres of useless marsh lands which never have been drained, and are scarcely susceptible of drainage. The malarial fevers are usually of a mild type and amenable to treatment, but there are occasional cases of exceptional gravity.

12. *Caroline County* lies between the Rappahannock on the north, and the North Anna, which separates it from Hanover, on the south. It is traversed by the Mattaponi in the eastern half, and by the four constituent head streams of that river in its western portion. The Rappahannock is a large navigable river with tide water along the entire length of the county, but salt water does not extend to its borders. The numerous and extensive marshes along the banks of this river being daily covered with the tide are thereby in some measure purified. But smaller marshes are found here and there in the midst of arable low grounds which are beyond the reach of the tides and yet too wet for cultivation even in seasons of drought. The two other rivers are not navigable and are without tides within the limits of this county. The Mattaponi has extensive low grounds in the lower end of the county, and among them are extensive tracts of marshy deposits utterly unfit for cultivation. There is comparatively little of such deposit on the grounds skirted by the North Anna, of which the banks are quite high even to the water's edge. Both these streams are liable to overflow in rainy seasons, when a large extent of surface becomes submerged and remains so for some time, the water receding very slowly. The number of acres of permanent marsh lands is not known. The county being rather large, there are many parts at a considerable distance from these marshy deposits, and before the late civil war these portions were efficiently drained and successfully cultivated, but since the change of the labor system of Virginia, drainage and proper tillage have greatly suffered. Accumulations of drift wood have been allowed to obstruct the smaller streams, dikes have needed, without receiving, reparation, and ditches have filled up, so that a large amount of land, formerly well drained, is now either entirely submerged or sobby from soil-saturation. Autumnal fevers, intermittent, remittent, and continued, prevail in this county. At times almost all diseases, but especially pneumonia, pleurisy, and even diseases of the stomach and intestines, seem to exhibit an intermittent or periodic character. Dr. J. A. Flippo, who is responsible for this statement, reports that he has seen at times nearly all the continued fevers then prevailing commence as pure intermittents and continue so for days together, then gradually run into the continued form and assume a typhoid type. There is a singular variation from year to year as to the number of cases and their severity, they being some-

times numerous and very mild, and in another year few but very severe. Sometimes for a series of years there will be a gradual increase and then a gradual decrease of the number of cases, so that several times Dr. Flippo has noticed an entire absence of autumnal fevers for an entire season. There was such a gradual increase from 1845 to 1848 inclusive, and then a diminution from 1849 through several succeeding years. Similar changes were observed from 1860 to 1863, and from 1864 to 1869, with marked increase since the latter date. He is unable to account for these alternations. The fevers of this county are unquestionably more frequent near and on the water-courses, around mill-ponds, and on high situations very near water with no intervening woodland. In the upper parts of the county, instances of extreme longevity are by no means rare. Dr. Flippo can himself recall to mind as many as one hundred and thirty persons who were personally known to him, and whose ages were from seventy-five to one hundred years. These were all resident within a circle of fifteen miles in diameter.

13. *Charles City County* is nearly surrounded by tide water, having the James River for its southern and the winding Chickahominy for its eastern and northern boundaries. Including the swamps of the Chickahominy it has about fifteen to twenty thousand acres of marshy land according to the estimate of Dr. Junius Roane, from twenty to thirty thousand according to Dr. A. Wade. Both these gentlemen report that intermittent fever is *the* disease of the county, and that it modifies all other diseases. Dr. Roane adds that the malarial diseases of his county "are dependent, to a very limited extent, upon insufficient drainage." From the general tenor of his communication I infer that he ascribes most of the malaria to the paludal poison of the Chickahominy Swamps, and, considering these to be practically irreclaimable, he interprets the question as relating to drainage where alone drainage is feasible.

14. *Chesterfield*, on the south side of James River, which is its northern boundary from a few miles above Richmond to City Point at the mouth of the Appomattox, has the latter river on the south and east. The surface is broken, and except on the rivers is rather poor. It has an extraordinary amount of marsh lands, not less than 20,000 acres as reported by Dr. J. L. Dorsett, on the authority of the county surveyor. Nearly all the rivers and creeks of the county overflow their banks in consequence of

obstructions in their channels. Residences in proximity to these streams are visited annually by intermittent and remittent diseases, while at other places they occur less frequently, being unknown at some localities except when they occur as epidemics. Such epidemics of malarial fevers occurred within Dr. Dorsett's experience in 1846, 1862, and 1873.

15. *Essex County* extends for a distance of thirty miles along the Rappahannock with a mean width of ten miles, and is intersected at various points by creeks which fall into that river. These streams are bordered by marshes on each side, amounting in the aggregate to five or six thousand acres which are under water at high tide. The surface in the western part of the county is moderately hilly, and the soil generally sandy and barren except on the creeks. The *whole county* is more or less subject to malarial diseases, but Dr. Jas. H. Latané, who reports the fact, ascribes them to the marshy deposits along the borders of the creeks, and, considering these to be irreclaimable, does not think that any considerable benefit will be derived from a more thorough drainage of the higher lands.

16. *Hanover County*, lying between the Chickahominy on the south and the North Anna on the north, is intersected in its western or upper portion by three respectable streams, besides the two which skirt its borders. There are, however, several creeks of some importance. In the angle between the North Anna and the South Anna Rivers, called the "Forks of Hanover" and embracing a territory of about three hundred square miles, there are numerous millponds, most of which, however, are on rapidly running streams with rocky beds and high banks, and do not spread to any considerable extent beyond the limits of the natural banks, except in a few special cases. In this section of the county the lands are hilly with a few exceptions, and are well drained. In the eastern section of the county the Pamunky River, formed by the junction of the North and South Anna, feels sensibly the influence of the tides. This portion is more generally level, though here and there high hills bound the flats of the creeks and rivers. There is also some boggy land on the Pamunky and Chickahominy Rivers. There is a third section deserving special notice, namely that of the "Slashes of Hanover" in the southern portion of the county. It contains about thirty square miles of territory, which is everywhere flat and "*slashy*." In several places there are many acres in their primitive forests covered with

water from one to two feet deep for three-fourths of the year ordinarily, and more than half even in the driest seasons. The soil is a stiff loam with an impervious sub-soil. The foregoing statements are made by Dr. L. B. Anderson, who adds that if we include under the general designation of "marsh lands" all flat lands where permanent moisture is associated with coarse vegetable growth, the number of acres in Hanover County is very great. Dr. T. H. Kinney estimates the amount as high as one-tenth of the entire area of the county. It is the concurrent testimony of these and two other medical witnesses in this county, namely, Dr. C. R. Cullen and Dr. W. S. R. Brockenbrough, that the summer and autumnal fevers, and other diseases usually ascribed to soil moisture, form a very large percentage of the total number of diseases of the county. Dr. Cullin furnishes the subjoined tabular statements of the total number of cases treated by him, from July, 1865, to the end of 1873, and the proportional number of intermittent and remittent fevers, diarrhœa, and dysentery. His field of practice extends from Atlee's Station, Chesapeake and Ohio Railroad, ten miles north of Richmond, to the Dispatch Station ten miles below Richmond, on the York River Railroad, including the Chickahominy battle-fields on the Hanover side. He is unable to account for the extraordinary variations from year to year, as he attended about the same number of families each year.

	Last half of 1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873
Whole number of cases treated	292	334	270	371	154	229	309	334	370
Cases of intermittent fever .	104	71	60	32	6	37	63	45	48
" remittent " . .	78	35	46	27	13	31	40	59	52
" diarrhœa . . .	no report	23	10	18	6	5	8	13	14
" dysentery . . .	no report	25	53	13	2	10	14	11	18

During the last year (1873) he lost the month of March, and again a month made up of the last half of August and first half of September, by his own sickness, but for which the total number would have been increased to the extent of seventy-five or one hundred cases, of which two-thirds in all probability would have been cases of malarial disease.

17. *Henrico County* lies between the James and the Chickahominy. The influence of the tides extends as far as the Falls of

the James at Richmond. With the exception of the lands on the river the soil is generally light, and the surface undulating. The diseases of the county, according to Dr. Carthon Archer, are mostly of malarial origin, and due to a large extent to insufficient drainage. He is unable to specify even approximately the amount of marsh lands, but knows it to be considerable. Since the war, intermittents appear in portions of the county previously exempt from such affections. During the war the smaller watercourses were obstructed by felled timber, drainage was neglected, and surface drainage prevented in many places by trenches cut for military purposes. The impoverished condition of the landowners has prevented them from doing anything towards removing the evil.

18. *City of Richmond.*—The following mortuary statistics, derived from the Annual Report of the Municipal Board of Health for the year 1873, will prove suggestive as to the extent of morbific influence due to insufficient drainage.

Total number of deaths from all causes 2037; white 977; colored 1060.

	White.	Colored.	Total.
Intermittent, remittent, and congestive fevers	11	14	25
Typhoid fever	41	34	75
Cerebro-spinal meningitis	6	4	10
Diphtheria	52	14	66
Croup	16	10	26
Bronchitis	10	6	16
Pleurisy	1		1
Pneumonia	50	59	109
Consumption	91	148	239
Rheumatism	3		3

Dr. J. G. Cabell, President of the Municipal Board of Health, reports a large increase of zymotic diseases since the war, which he attributes partially to causes operating beyond the city limits, namely, to the neglect of drainage on the adjacent farms, the city being thus surrounded by a miasmatic atmosphere. The system of sewerage introduced within this period has not been conducted with reference to drainage of those parts of the city which most needed drainage, but almost exclusively with a view to the removal of sewage. The amount of marsh lands within the city limits is inconsiderable, while the surface liable to "soil-saturation" is still very large, both on the eastern and western borders of the city.

19. *James City County* is washed by the James, the Chicka-

hominy, and to a small extent by York River, which touches a small extent of its eastern boundary. The surface in the interior is in undulating hills. Dr. D. R. Brown, Superintendent of the Eastern Lunatic Asylum at Williamsburg, reports that at least fifty per cent. of the diseases of the county are due to insufficient drainage, but he does not know the extent of marsh lands.

20. *King and Queen County*, a long and narrow territory between the Mattaponi, which skirts the southwest border along the greatest length of the county, and the Piankatank on the northeast, also touches York River for some miles below the point where it is formed by a confluence of the Mattaponi and the Pamunky. Marshes abound in this county. Dr. W. L. Broaddus estimates the number of acres at six to eight thousand, and expresses the belief that at least 75 per cent. of the diseases are due to insufficient drainage. He refers to a particular locality which was always disposed to surface-saturation, but before the late civil war, it was kept under thorough drainage, which gave it a good sanitary record. Since the war this has been neglected, and *intermittent fever has increased three hundred per cent.*

21. *King George*, a small county between the Rappahannock and Potomac Rivers, has in the interior a somewhat hilly surface and diversified soil, but along the watercourses, consisting of many tidal creeks tributary to the two rivers on its borders, has marsh lands to the estimated extent of 5000 acres. This estimate, for which I am indebted to Dr. Fred. Ninde, includes not only open marshes, but also *pocosins* contiguous to the river, which, though generally covered with water, have trees growing in them, some of which are very large. Malarial fevers are the principal diseases.

22. *King William* forms a triangle between the Pamunky and Mattaponi Rivers, and extends for a distance of forty-five miles from their confluence at West Point, the head of York River. Drs. G. W. Pollard and R. G. Hill report, as their opinion, which they believe to be also that of the other physicians of the county, that at least 75 per cent. of its diseases are due to insufficient drainage. Their estimate of the amount of marsh lands is 30,000 acres, and they add that portions of the county distant six or eight miles from the nearest marsh, are equally subject to intermittents irrespective of the direction of the winds. Above the head of navigation the rivers are frequently blocked by falling trees and drift wood, so that after heavy rains they overflow their

banks and inundate the low grounds, and on the general recession of the waters, pools are left here and there, which, when dried by solar evaporation, become fruitful sources of malaria. The same condition of the rivers and low grounds prevents effective drainage of the now distant fields, and thus a very large part of the land is subject to soil-saturation.

23. *New Kent*, a small and narrow county between the Chickahominy and the Pamunky, has, according to Dr. S. P. Christian, 4956 acres of marsh lands, on which a large amount of fallen timber is allowed to remain and undergo decay. He is convinced that the diseases of the county are, "to a very great extent," due to insufficient drainage, for he has observed that since the war there has been a large increase of intermittent fevers, which has coincided with an almost total neglect of the means of drainage which were employed prior to that time.

24. *Southampton*, on the North Carolina border, is washed by three principal rivers and their respective tributaries, namely, the Blackwater on the east, the Meherrin on the south and southwest, and the Nottoway, which traverses the county from northwest to southeast, and determines the general slope of the land. Dr. W. H. Daughtrey reports, as the opinion of those who are best informed on the subject, that the county "contains at least 40,000 acres of marsh lands." He adds that its diseases "are, in a great measure, due to malaria prevailing in the neighborhood of the various swamps, as well as on the Blackwater, Nottoway, and Meherrin Rivers." Dr. G. N. Musgrave believes that nine-tenths of the diseases of the county "may be attributed to the cause indicated." Estates on which there was but little sickness before the war, when they were well drained, now suffer almost constantly during the summer and autumn months from intermittent diseases.

25. *Spottsylvania County* is drained by the head waters of the North Anna and Mattaponi Rivers, and is washed by the Rappahannock on its northern border. Dr. S. W. Carmichael reports that there are no marshes on the smaller streams, and only about 100 acres on the Rappahannock. The diseases prevailing before, during, and immediately after the war, were due, in a great measure, to insufficient drainage. Contrary to the general rule elsewhere in Eastern Virginia, Dr. Carmichael reports that the land has been better drained of late, and, as a consequence, that diseases of malarial origin have lessened in frequency and severity.

26. *Surry County* lies south of James River, which forms its northern boundary, and has the Blackwater for its southwestern limit, this river traversing the southeastern angle of the county. The northeastern portion slopes towards the James, which has salt water within the limits of this county. Dr. S. B. Barham reports that the extent of technical marsh land is not great, but of the pocosin lands and the flats which are alternately wet and dry, the number and extent are very great. Not all of these are equally productive of malaria. He states that "some of the pocosin lands are as free from malarial diseases as any part of the county, while others are as badly infected as the flats on the Blackwater." He adds "that sand enters more freely into the composition of the non-malarious soil, while the soil of the malarious districts is composed largely of a dark loam."

27. *Sussex County*, lying to the northwest of Southampton, has a similar topography as to means of natural drainage. Dr. A. M. Adkins reports that about one-sixteenth of the area consists of marsh lands, and gives rise to about fifteen per cent. of the intermittent fevers.

III. COUNTIES BETWEEN THE HEAD OF TIDE-WATER AND THE EASTERN BASE OF THE BLUE RIDGE.

The Blue Ridge chain of mountains extends entirely through the State in a southwestward direction from Harper's Ferry in the north, to the North Carolina line on the western limit of Patrick County. From the eastern base of this ridge the land slopes towards the Chesapeake Bay with a fall in the rivers of about 500 feet, but as the surface of the land between the rivers is much more elevated, the slope of the soil is generally much greater than this amount of fall would of itself indicate. The geological features are too varied and irregular to admit of any general exposition. This section of the State, especially the tier of counties proximate to the ridge, is particularly favorable for the physical nurture of the human race. The lands are generally fertile and susceptible of improvement, the water abundant and good, and the natural drainage in most places so perfect as to require little or no assistance from art. It is doubtful whether malaria could be produced in the Piedmont counties by soil saturation. This remark does not, however, apply to the counties further removed from the Blue Ridge and lying near the head of

tide-water. In these the streams have less fall, and are, consequently, more sluggish, with low banks subject to frequent overflows, and the surface of the soil less favorably adapted for efficient natural drainage. Moreover, as recent and sad experience has demonstrated, the soil is impregnated with the essential cause of malaria which needs only the influence of moisture to determine its activity. The remarks of Dr. Claiborne on this subject which will be cited in connection with the medical topography of the city of Petersburg and the adjacent counties, find an echo in every communication received from other counties on the south side of James River, and a few of those on the north side of that river. A special notice will here be given of each of the counties not in immediate proximity to the Blue Ridge, so far as communications have been received from the same. As to the Piedmont counties proper a common notice will suffice.

28. *Amelia County* lies south and west of the Appomattox River, which thus forms its boundary on two sides; has Namozine Creek on the S. E., and is drained by various creeks which flow into the Appomattox. Like the other south side counties (*i. e.*, counties lying in the section south of James River) the soil is malarious, and neglect of drainage insures the generation of miasm. Dr. J. W. Southall states that "more than eighty per cent. of the cases he treats are malarial." He cites "two cases, *both in millers*, one of consumption, and another of dropsy connected with hepatic disorder, and both evidently of malarial origin. I mean by this that both the consumption and the dropsy were developed after long suffering from the mill-pond miasma." All of the streams which traverse the county or skirt its borders afford more or less of marshy deposits, and abound with mill-ponds. It is in the vicinity of these ponds that malarial diseases are most prevalent and most difficult to control. Dr. M. F. Evans of the same county reports an enormous increase of malarial diseases since the war, and considers them evidently dependent on defective drainage.

29. *Appomattox County* is washed by the James and Appomattox Rivers, and numerous creeks, which empty into them. Dr. C. S. Morton reports that this county is generally free from malarial diseases. Yet, during the past summer and autumn (1873), he had numerous cases both of intermittent and remittent fevers, some of which were protracted and obstinate, a state of things which had not been observed since the summer of 1846.

These cases occurred mainly along the line of the creeks where the adjacent soil had been saturated by the profuse rains of the summer.

30. *Brunswick County*, on the North Carolina border, is drained to a very small extent by the Roanoke River in the southwestern corner of the county; but the great body of its lands slopes eastwardly, and is drained into the valleys of the Meherrin and Nottoway Rivers. Drs. N. C. Lewis and R. S. Powell concur in stating that the greater part of the diseases of the county are due to insufficient drainage. Before the war it was nearly exempt from diseases of this class under a system of thorough cultivation, and of the drainage which this required. But since the war, owing evidently to a neglect of ditching and other means of drainage, there has been a steady increase of malarial diseases, with this partial exception (which too will probably prove to be only temporary), namely, that, as the effect, apparently, of the profuse rains of last summer, some of the marsh lands became more healthy than before. Dr. Powell, who reports this fact, adds that intermittent fevers thus disappearing from some of the marshy lands prevailed over the hills where they had seldom been seen before. The marsh lands remaining submerged by the heavy rain-fall were thus excluded from the sun's rays, and so one factor in the production of malaria was wanting; while the hills, it is presumable, were under the influence of soil saturation.

31. *Campbell County*, between the James River on the north, and the Staunton on the south, with a hilly surface well adapted for natural drainage, has but few diseases attributable to insufficient drainage. This statement is made by two correspondents in that county, Drs. R. T. Lemon and T. L. Kabler. "Now and then," says the former, "a case or two" of malarial fever "occurs in the vicinity of old and large mill-ponds. This is most likely to occur after a dry August preceded by a wet June and July."

32. *The city of Lynchburg* is on the south bank of the James River within the limits of Campbell County, and enjoys a natural surface-drainage which leaves but little to be desired. Drs. M. P. Christian, D. A. Langhorne, and Ben. Blackford concur in stating that only an inconsiderable proportion of the diseases of the city and its environs can be ascribed to insufficient drainage. They think that soil moisture has much to do in increasing the number of cases of consumption among the negro population of

the city who reside in cellars. The mortality for the past year (1873) from this disease was 67, of which number 53 were negroes in a population of 3472 whites to 3353 negroes (census of 1870). While admitting the existence of other factors they feel assured that dampness has a marked influence in causing consumption.

33. *Charlotte County* is washed on its southwestern border by the Staunton, and is traversed by a number of the tributaries of that river, of which the principal is the Little Roanoke, a rather sluggish stream, which, unless carefully kept free from obstructions, overflows its low banks and often causes marshy deposits. The extent of marsh lands has not been definitely estimated, but Dr. P. H. Flournoy, of this county, considers it to be very large, and to exceed the amount found in any of the neighboring counties. He is convinced that a very large percentage of the diseases of the county is due to insufficient drainage, for in a practice of nearly thirty years he had never seen a case of intermittent fever until after the war. Prior to that period the rivers and creeks were kept free from obstructions and kept within their proper beds by dykes, while the lands were well ditched. Since the war all this has been neglected for want of means, and now malarial and typho-malarial fevers prevail to an alarming extent and with fearful malignancy.

34. *Cumberland* is a long and narrow county with the James and Appomattox Rivers on its two short sides. It is traversed through nearly its entire length by Willis River, a tributary of the James, and to a less extent by smaller tributaries of the Appomattox. The surface is undulating and admits of easy drainage, though many of the smaller streams have broad marshy flats which Dr. R. P. Walton estimates as covering from one-twelfth to one-tenth of the entire county. He reports that during the last year (1873) intermittent fever prevailed to an extent not known since 1846, if then. Both in 1873 and in 1846 the fever, which exhibited some of the characters of an epidemic, prevailed as much in other localities as in those which were in immediate proximity to the marshes, but in the latter the cases were longer continued and more apt to relapse. For several years preceding each of these epidemics there was so little rain that all the crops suffered, but the spring and summer of 1873 were very wet. So far as these two epidemics are concerned, he is inclined to doubt their dependence on defective drainage, inasmuch as they prevailed almost as extensively on the water-shed of the county as

on the lowlands. Sporadic cases, however, appear almost every year on the lowlands near to rivers or to marshy land.

35. *Dinwiddie County*, south of the Appomattox, is drained in its northern portion by that river, and in the larger part of its surface by the Nottoway and its tributaries. The surface is undulating, but, owing to obstructions in most of the streams, the drainage is now extremely defective, and since the war malarial fevers have increased immensely in frequency and malignancy of type. Dr. Hume Field reports that in one portion of the county the citizens were moved by their fears to hold a public meeting with a view to general co-operation towards removing the cause of the mischief. Dr. Knox Thompson thinks that at least two-thirds of the diseases of the county are due to insufficient drainage, and both gentlemen report on the authority of the county surveyor that one-tenth of the entire area of the county, or about 29,504 acres, are now marshy, most of it having become so of late years "by farmers neglecting their ditches, and by the operations of beavers building dams across the creeks."

36. *City of Petersburg.*—The greater part of this city lies in Dinwiddie County on the south bank of the Appomattox at head of tide. Dr. J. H. Claiborne reports that the climatic diseases of the city, "intermittent and remittent fevers and a spurious pneumonia near akin to the congestive fever of the Mississippi Valley, are due almost entirely to want of proper drainage." Sixty years ago all parts of the town and its suburbs were alike pestilential. Even as late as twenty-three years ago when Dr. Claiborne first came to the city he encountered *two* cases of such diseases to *one* now seen. He ascribes this improvement to surface drainage effected by grading and paving the streets, and to the construction of underground sewers. The improvement in the sanitary condition of the city has been *pari passu* with these works, "until now no city in the commonwealth can furnish a better mortuary record in proportion to its population." In certain portions of the environs, as, for example, at Blandford immediately on the river bank, and separated from the city proper by an open marsh and creek into which the tide backs daily, and at Pocahontas on the north side of the river with a marsh in the rear, there is still a great amount of malarial fever of a most malignant type. Such fevers are, in children, ushered in by convulsions, and they are often fatal. These suburbs are neither paved nor drained. The soil is mostly alluvial. The remittent

fevers prevail mostly in the latter part of summer, disappearing with the advent of frost, but the intermittents are not thus arrested when once the malaria has been imbibed.

As to the country tributary to Petersburg, Dr. Claiborne states that prior to the war, when the land was in a good tillage and well drained, malarial fevers were known, but they were not general nor severe, sometimes not visiting a plantation for years. Now, on the other hand, in all this region up to the Piedmont line of counties, fevers of remittent and intermittent types are so rife and so grave as seriously to interfere with agricultural operations, and to give rise to apprehensions that some otherwise desirable localities will have to be abandoned. Formerly, when laborers could be commanded, these lands were protected by dykes, ditches, underground pipes, etc., but now they are neglected as to drainage, and the beavers, which have recently multiplied with extraordinary rapidity, have built and are building dams on every small stream, causing obstructions which lead to the overflowing of the meadows and lowlands, and thus saturating the soil all the year round.

"A fever has become prevalent in some portions of the country known by the people as the 'Yellow Disease.' It is evidently a malignant bilious remittent fever, accompanied with jaundice and hæmaturia. . . . . Some of the practitioners call it the 'Interior Yellow Fever,' which Dr. Claiborne does not consider a misnomer."

37. *Fluvanna County*, on the north side of James River, is traversed by the Rivanna, which runs from northwest to southeast, dividing the county diagonally, and emptying itself into the James. The Hardware River also passes through the southwestern corner of this county, which, by means of these several rivers and the numerous creeks, has a good natural drainage except for the river bottoms, which are liable to overflow, but this happens only at wide intervals, and these bottoms are usually in good cultivation. Such overflows are most likely to occur, according to Dr. W. Bowles, at the junction of the Rivanna and the James, near the town of Columbia; and Dr. R. Galt, writing from that part of the county, reports that "a vast majority of its diseases are, at present, of a malarial character, owing to bad drainage of the low lying lands along the river." There are no permanent marsh lands in the county, so far as is known to either of these gentlemen.

38. *Halifax County* is richly watered by the Staunton River on its northern and eastern borders, and by the Banister, the Dan, and the Hycootee, with their respective tributaries which traverse the county. These are mostly sluggish streams, and all of them overflow their banks two or three times a year or oftener, when the extensive low grounds are submerged for four or five days. On the recession of the main body of the water, pools are left in the depressed parts of the surface which are finally dried by solar evaporation. On the large creeks there is much marshy land. Dr. Melvin estimates the amount to be from 10,000 to 15,000 acres. Both he and Dr. J. Grammar report, on the authority of the older physicians of the county, that intermittent fever first appeared in a mild form in 1843, and continued to increase until 1846, when it prevailed so extensively, and in so malignant a form as to absorb attention and to cause many persons, who had overlooked the few mild cases of the immediately preceding years, to date its advent at this period. It was then a veritable epidemic, prevailing in this and most of the adjoining counties. Since that period malarial fevers have prevailed to a greater or less extent every season. Prior to the first appearance of the intermittents, there were cases of typhoid, a possibly typho-malarial fever, but now this type is seldom seen. "It is further noticeable that intermittent and remittent fevers do not exist together in this locality," according to Dr. Grammar. When one class prevails you rarely see the other.

39. *Louisa County* is traversed throughout its length by the South Anna, and bordered on the north and northeast by the North Anna. Tributaries of these rivers, those of the North Anna being more numerous, arise in a central ridge extending through the length of the county, and pass northeastwardly and southeastwardly respectively. Dr. W. A. Gillespie reports that these streams readily become obstructed with sand and then overflow their banks, leaving debris and mud on the moist bottoms, which, drying in the summer sun, generate malaria. There are very few marsh lands, except such as these, which amount to from three to five per cent. of the whole area of the county. Dr. R. L. Barret's estimate is more liberal, namely, about 10,000 acres. He considers that a considerable percentage of the diseases of the county, as observed in the last few years, may be charged to insufficient drainage. He cites an instance, however, in which a whole family, living on a poor and elevated spot, suffered from

intermittents for years, and eventually one member of the family died from a congestive chill. There was no marsh near, and he thinks there was no soil saturation, the soil being of precisely the same character here as in the uninfected vicinity. No other cases occurred at the time, or have been observed since, within eight miles. He conjecturally ascribed this endemic to remains of pressed apples which had been allowed to accumulate in large heaps *against and under* the log house occupied by the family. He does not state whether this decaying mass of vegetable matter was eventually removed or not, and if removed what was the effect on the sanitary condition of the locality.

Before the war he saw two cases of chills and one of remittent fever at Louisa Court House, which is on the dividing ridge between the tributaries of the North Anna and the South Anna. These parties occupied a room over a cellar which contained water. Dr. Gillespie states that after 1831–32, when there was an epidemic of malarial fevers on the North Anna and its tributaries, the county enjoyed an almost entire exemption until recently, especially since 1871, when intermittents and remittents have become quite numerous.

40. *Mecklenburg County*, on the southern border of the State, is washed by the Meherrin and Roanoke Rivers and their respective tributaries. Dr. John R. Leigh, residing at Clarksville, where the Staunton and the Dan unite to form the Roanoke, reports that along these rivers there is a large extent of bottom land not well drained but still in cultivation. He thinks that the amount of marsh land in his (southern) portion of the county, will not exceed three hundred acres. He is not informed as to the amount in the other half. The recent diseases of the county are nearly all of malarial origin, and are *not* confined to the neighborhood of rivers, creeks, and mill-ponds. Formerly the low grounds were kept habitually well drained for agricultural purposes. Now from want of labor the drainage is very defective, and malarial diseases are vastly more frequent and more violent. Other diseases, as pneumonia, dysentery, etc., are nearly always complicated with the effects of malaria, and cannot be successfully treated without the use of quinia.

41. *Orange County* lies between the Rapidan on the north and northwest, and the south fork of the North Anna on the south. It is traversed from west to east by the north fork of the latter river. The western half of the county has a close resemblance

in its topographical features to the Piedmont counties which are in immediate contiguity with the Blue Ridge, but even there Dr. G. Newman reports that a few cases of intermittent and remittent fevers have appeared in the last few years, apparently from neglect of drainage. Dr. T. Woolfolk, in the northeastern portion of the county, between the north and south forks of the North Anna, reports that intermittent fevers were rarely seen in his practice until towards the close of the war, since which time they have gradually increased in consequence of the low grounds becoming marshy by the filling up of the ditches. Last year nearly every family living within a mile and a half of the rivers and creeks was more or less affected by malaria. In this part of the county the lands are stiff, and generally saturated during the winter and spring months. Pulmonary diseases are more frequent in Dr. Woolfolk's practice than they are in the contiguous county of Louisa, where the soil is much lighter and more dry. He does not know the extent of marsh lands in the county, but is convinced that there are fifty acres of such land now where there was one before the war.

42. *Powhatan County*, with the James River on the north, and the Appomattox on the south, is traversed in a direction nearly at right angles with the course of these rivers by their tributaries, which are numerous. The natural drainage is accordingly quite good in many parts of the county, but there is a good deal of flat land along the banks of these streams, and since the war neglect of ditching and other means of agricultural drainage has largely increased the area of saturated soil, with a corresponding increase of malarial diseases. Dr. R. W. Nelson, now of Charlottesville, but until lately a resident and practitioner of medicine in Powhatan, states that according to the information given him there had been a remarkable exemption from malarial diseases, except in low marshy places, for many years prior to 1842 or 1843, after which there was a rapid increase for several years. In 1849 and the immediately following years there was an almost complete absence of malarial fevers in this and other counties just above the head of tide-water, previously more or less subject to malarious influence. During this period and down to the close of the war, typhoid fever was the prevailing type of fever, and there were also several epidemics of scarlet fever, diphtheria, measles, and whooping-cough. It is, doubtless, something more

than a coincidence that for a short time prior to 1849, and thereafter until the war, the farmers of Powhatan had paid extraordinary attention to measures of agricultural improvement, including systematic drainage. They organized themselves into a county agricultural society, had their lands examined by an agricultural chemist, and took leading parts in the proceedings of the State Society. In 1866, at the close of the war, all improvements having been suspended during the previous five years, intermittent fever reappeared, and has continued down to the present time, drainage having been almost entirely neglected all the time. Dr. Nelson seldom found intermittent and typhoid fevers to prevail at the same time. He has observed consumption to be caused or promoted by wet locations, especially among the colored race, a manifest improvement taking place when a change to dry cabins was made. Dr. P. S. Dance, of the same county, has communicated brief answers which, as far as they go, are in accordance with Dr. Nelson's testimony.

IV. PIEDMONT COUNTIES PROPER.

This group consists of a tier of counties skirting the eastern base of the Blue Ridge, in all of which the land has a general slope away from that mountain, and presents a very diversified surface of high hills or even mountain ranges, some of which are spurs of the Blue Ridge, and others independent formations at a greater or less distance from the latter. The streams are numerous, have a rapid fall, and effectually drain the entire surface of the country. The counties belonging to this belt are, in the order of sequence from north to south, as follows; Loudon, Fauquier, Rappahannock, Madison, Greene, Albemarle, Nelson, Amherst, Bedford, Franklin, and Patrick, to which Henry County immediately east of Patrick should be added, for, though it nowhere touches the Blue Ridge, the united width of Patrick and Henry from west to east, along their northern border, does not exceed the single width of the other Piedmont counties, and the topography of Henry is identical with that portion of the latter counties which is at a little distance from the Ridge. This whole region is so entirely exempt from intermittent fevers as to justify the assertion that the soil is non-malarious and incapable even when in a state of saturation of generating malaria. An exception to this statement must be made with reference to a small portion of

Albemarle, Nelson, Amherst, and Bedford Counties immediately on James River, a few cases of intermittent fever occurring along the low grounds of that river. It is probable that some parts of Loudon, along the Potomac, may be the seat of malarial diseases, but I am without information from that quarter. Communications have been received from Drs. A. S. Payne and Fred. Horner, Jr., of Fauquier, Dr. G. B. Jennings, of Greene, Dr. T. B. Greer, of Franklin, and Drs. H. D. Peters and J. Sample, of Henry. These gentlemen concur in representing that, almost without exception, intermittents are unknown in their respective counties, and other Piedmont counties adjacent to them. Rheumatism, acute, subacute and chronic, bronchitis, pneumonia, consumption, and typhoid fever are the principal diseases which appear to depend on local causes. It is a common opinion that typhoid fever prevails to a greater extent in this region than in eastern Virginia. I question the accuracy of this opinion. And yet there are some grounds for the opinion that this fever is more frequent in the gorges of the mountain where effective ventilation is precluded. Its relation to soil moisture cannot be determined by any observations hitherto made in this region.

Dr. Greer, of Franklin, says: "I am satisfied, from observation and inquiry, that we have more typhoid fever than in any other part of the State. It is also a recognized fact with the resident physicians that the nearer we approach the mountain the more common and the more malignant the disease becomes. I cannot understand how it would be possible to refer it, or any of our diseases, either directly or indirectly, to insufficient drainage."

V. COUNTIES IN THE VALLEY OF VIRGINIA.

The great valley of Virginia includes the valley of the Shenandoah River between the Blue Ridge and the Great North Mountain, a middle valley south of the sources of that river inclining to the east and drained by the James and Roanoke Rivers, and an extreme southern portion which inclines to the northwest and is drained by New River and the Great Kanawha. The counties lying in this latter portion of the great valley have generally been classed with the Transalleghany counties, since their waters flow to the Ohio. This great valley is a continuation of the Kittatinny Valley of Pennsylvania, and is a mountain plateau of a mean elevation of one thousand feet above the sea,

many places even at the base of mountain spurs being considerably higher. A stratum of limestone of varying breadth, but sometimes as much as twenty miles or more, runs nearly parallel with the Blue Ridge on its western side, and the waters are largely impregnated with carbonate of lime held in solution by excess of carbonic acid, and deposit a calcareous crust on boiling. Further west, limestone is again found in limited localities, as in the Warm Springs Valley and the valley of the Sweet Springs, in Alleghany County, at the eastern base of the Alleghany Range.

From that portion of the valley whose waters make for the Atlantic, whether first northwardly by the Shenandoah and its branches which unite with the Potomac at Harper's Ferry, or, southeastwardly by the James and Roanoke Rivers, communications have been received from seven medical men, namely, Drs. S. S. Neill and A. C. Randolph, of Clarke; H. Brumback, of Page; John Graham, of Rockbridge; A. P. Belew, of Shenandoah; J. H. and C. B. Griffin and G. P. Terrill, of Roanoke. These gentlemen state that their respective counties have admirable facilities for natural surface drainage, aided in some few localities by underground currents moving in channels which communicate with the surface by means of a very porous soil or by distinct apertures. They further state that their counties are almost entirely exempt from diseases usually ascribed to malarial origin. This general statement is, however, subject to the following qualifications. Dr. Brumback, of Page, which county consists of one entire valley (the Luray Valley), lying between the Blue Ridge on the east and Massanutten Mountain on the west, with the Shenandoah River traversing its entire length from south to north, thinks that about ten per cent. of the diseases of the county may be referred to insufficient drainage, and that about two per cent. of its area consists of marsh lands.

Dr. Terrill, of Roanoke, reports that a few, and only a very few cases of remittent fever, due to insufficient drainage, are observed in his county. He has seen but few cases of consumption, and these have always been unfavorably affected when there was much soil saturation. He has known consumptives from other parts of the State to be benefited by residence in Roanoke.

Dr. J. H. Griffin, who has practised medicine for more than a third of a century in this and the adjoining county of Botetourt, of which it once formed a part, remembers that in his boyhood, intermittent and remittent fevers prevailed along the water-

courses. They gradually disappeared, not as the result of systematic drainage, employed for that end, but under a more extended cultivation of the soil, which, of course, involved incidentally more or less of surface drainage. In the locality know as "Big Lick" a malignant fever prevailed to such a degree that it was designated by the community as the "Big Lick Fever." It prevailed during the summer and fall for several miles around the marsh, and was very fatal. It was supposed to be caused by the frequent emptying of a mill-pond, which had been erected on a stream that ran through the marsh, thereby exposing to the sun a thick marshy deposit over its entire extent of about twenty acres, as well as along the low grounds of the stream for two miles or more. As soon as the drawing off of the water was prohibited, and the pond kept full of water, the disease disappeared, and the neighborhood became perfectly healthy. An effort was subsequently made to drain the marsh, but it was unsuccessful. It remains a bog, but there has been no return of the fever. The history of the prevalence of typhoid fever in this section of the State does not suggest the idea of soil moisture as a principal factor. Dr. Griffin thinks that it first appeared (within the period of his professional career) in Jonesboro, Tenn., where it was reported to be very fatal. "It slowly travelled in this direction, stopping at certain localities, devastating whole neighborhoods, then skipping over a more or less considerable tract of country, and reached Roanoke in the summer of 1844. Here it prevailed extensively, but not fatally. It next made its appearance at New London, leaving a gap of fifty miles of uninfected country. It has prevailed here at least three times since that date, chiefly among hands engaged in the construction of roads. One was a macadamized road, located along a line in which the soil was dry and the shanties were on an elevated ground. In the other two cases the shanties were not far from the Roanoke River, but yet were on somewhat elevated and dry ground." Sporadic cases occasionally appear without discoverable local cause.

In confirmation of Dr. Griffin's inference that the "Big Lick Fever" was caused by the deposit from the mill-pond after the water was drawn off, and not by the original marsh matter, his son, Dr. C. B. Griffin, refers to a similar marsh of ten acres extent, which formerly existed in the town of Salem, in this county. That marsh was drained several years ago, but it had never given

rise to any case of "Big Lick Fever." This gentleman also refers to a malignant disease which prevailed for a short time in August last (1873) when the people of the United States generally were exercised on the subject of cholera, then prevailing in some of the western cities and villages. The infected locality was in the village of Needmore, in the adjoining county of Botetourt, and was described by Prof. C. Cocke, of Hollin's Institute, in that county, in a letter addressed to Dr. Griffin. "Needmore," says Prof. Cocke, "is a settlement of negroes. It spreads over a space of some fifty to one hundred acres in the spurs of the mountains. The soil is very poor and thin, while the subsoil is mainly loose slate. The region is destitute of good water, and the negroes obtain a milky stagnant water by digging holes in the ravines. In these holes the water gathered, but except in wet seasons remained stagnant. Last August, after a spell of dry weather, there came sudden and heavy rains, which, no doubt, caused filth of all sorts to wash from the hill-sides, where the cabins were built, into the pools from which drinking water was obtained. From the nature of the ground and the location of the houses, no doubt the drainage through the soil became impregnated with human and animal deposits, and thus the water, always foul, was made intensely poisonous. The effect was fearful on those who used the water. The victims were suddenly attacked with severe pains or cramps in the bowels, often extending to the limbs, accompanied with rice-water discharges, frequent and terrible griping, and, in a few hours, collapse ensued, followed by death." This outbreak of a disease closely resembling epidemic cholera lasted but a few days, and was not observed elsewhere in the county.

VI. WESTERN OR OHIO SECTION.

Since the creation of the State of West Virginia, out of a part of the original territory of the Old Dominion, but fifteen counties are left to this section. Communications have been received from only three, namely, from Giles County, Dr. J. W. Easley, Smyth County, Drs. J. L. Apperson and H. J. Garrett, and Washington County, Dr. W. F. Barr, all of whom state that in this very mountainous region, with rapidly flowing streams in the valleys, natural drainage is, in general, quite sufficient for sanitary ends.

Dr. Barr states "that occasionally sporadic cases of intermittent fever have occurred in Washington County, on the banks of

rivers and creeks after an overflow in summer." Dr. J. L. Apperson, of Smyth County, in view of the admirable adaptation of the sloping surface in the valleys of the three forks of the Holston River for natural drainage, and of the numerous "sink holes" leading to underground passages which furnish ready means of escape for large quantities of water, is of opinion that the pneumonias, pleurisies, rheumatisms, and neuralgias, which prevail to some extent in winter and spring, and the diarrhœa, cholera morbus, and dysentery observed in summer and autumn, are due to atmospheric rather than to telluric influences. Dr. H. J. Garret, of the same county, also reports an absence of malarial fevers, and the non-existence of marsh lands. He leaves to others to decide how far the continued fevers of the region may be ascribed to soil agency, but remarks that in the last eight or ten years they have undergone a remarkable change in assuming a much milder type.

III. *Have you intermittent diseases not attributable to marshy deposits, but to soil-saturation?*

Of twelve physicians representing the salt-water section, ten answer in the affirmative, one is doubtful but inclined to that opinion, and one, Dr. R. B. Tunstall, of Norfolk, qualifies his answer by saying, "I do not suppose that our intermittents are due to soil-saturation *independent* of other causes." Dr. Stoakley, of Northampton, says, "I have no hesitation in saying that our diseases of a miasmatic nature are more attributable to a general soil-saturation than to any deposits." Dr. G. W. Semple, of Elizabeth City County, justifies his opinion that most of the intermittents of the county are due to soil-saturation by referring to cases in which these diseases disappeared from certain localities as a result of drainage of the soil, "reappeared on the drainage becoming obstructed, and again disappeared from renewed drainage." Dr. Page, referring to his experience in Gloucester County, says, "during ten years practice in that county, previous to the war, I never saw a case of bilious remittent fever, and intermittents rarely existed on the river farms. The lands during that period were tolerably well drained. The practice of marling and liming the lands was nearly universal. During the war, and for several years thereafter, the practice of draining and liming the lands was abandoned. The ditches soon filled up, and the fields became overrun with weeds and bushes. As a result of

this change, the county was severely visited with intermittent and remittent fevers. For the last few years draining and liming have been resumed, and the land brought more thoroughly into cultivation. And now for the last two summers the health of the county has been nearly as good as formerly."

As to the counties on tide-water above the head of salt-water, eighteen physicians answer "yes" to this question, four are doubtful, and one, Dr. Flippo, of Caroline, while he does not reject the doctrine of soil-saturation as a cause of intermittents, is yet embarrassed by some of the results of his experience. After adverting to a fact, stated also by other correspondents, that when intermittents prevail as an epidemic they occur indiscriminately alike on wet and on dry lands, he refers partially to his own residence, which has a soil so wet as to preclude the construction of cellars, ice-houses, etc., and then proceeds to say, "and yet we rarely have had intermittent fever or any other disease, but the family of my overseer, living on an adjoining farm, distant one mile and a quarter, with as much rolling surface and much less soil-saturation, never escape when intermittents prevail."

As to the counties between the head of tide-water and the Blue Ridge, of thirty correspondents, eighteen, representing the lower counties of this section, and especially those on the south side of James River, answer "yes," four speak doubtfully, and eight, from counties proximate to the mountain, answer "no."

As to the valley counties, in which only a few exceptional cases of intermittents have been observed, we have yet five affirmative answers, these exceptional cases having been traced clearly to soil-saturation. One correspondent is in doubt, four answer "no," alleging that there are neither intermittents nor soil-saturation in their respective counties.

IV. *Are there places in your county where intermittent fever has disappeared as a result of systematic drainage of the surface-saturation?*

Nine out of thirteen correspondents in the salt-water region answer "yes," while four had never known systematic drainage to be applied in their counties. Among the former, Dr. Thorn, of Northampton, says, "intermittent fever can scarcely be said to have wholly disappeared, but the health of my neighbors when the drainage of surface-saturation has been general, has greatly improved. In certain neighborhoods before the war, when labor was abundant and reliable, draining and liming the lands became

very general among land-owners who could afford it, and in these localities I hazard nothing in saying there was a manifest and marked change in the health of the people, so much so that for several years before the war, August and September, instead of being our sickly months, as before and since, were really the healthiest of the year." Dr. Broadwater, of the adjoining county Accomac, thinks that intermittents have decreased fifty per cent. as the result of drainage for agricultural purposes. Dr. J. R. Page makes a similar statement with reference to Gloucester County. Dr. Nash, of Norfolk, remarks that "it is well known that before Norfolk was drained and paved, and supplied with cistern water, it was one of the most disease-stricken ports on the Atlantic coast. Now it will compare favorably with any. As the streets are graded and paved proceeding towards the suburbs, so its malarial fevers recede." Dr. Tebault, of Princess Anne, says, "it has been well known here for many years, that thorough drainage by open ditches (for we have none covered) has *almost* banished intermittent fever from large tracts of level, spongy soils that were formerly so moist as to be but poorly productive of cereals, but are now among our best farming lands."

Of twenty-three correspondents in the upper tide-water section, ten answer "yes," while thirteen have had no opportunity of observing the appreciation of this test. Among the former, Dr. W. S. R. Brockenbrough, of Hanover, adduces an example of what can be accomplished by the energy of a single individual, guided by intelligence and scientific knowledge, in effecting great agricultural and sanitary improvements on a large estate. "The late Edmund Ruffin, Sr., purchased in 1843 an estate some five or six miles below me on the Pamunky, known by the name of Marlbourne, on which there were some eight hundred acres of low, alluvial, flat land, imperfectly drained by a defective system of open ditches. This farm, like those around it, had always been subject to the usual autumnal fevers, till Mr. Ruffin took possession and commenced a system of drainage with great vigor by deep, open ditches, and by covered drains. This was followed by deep ploughing and the liberal use of calcareous manures under the personal supervision of the proprietor. A very striking effect was soon obvious in the improved health of the servants and the family, and in two years malarial disease had nearly entirely disappeared, and the blessing of health came hand in hand with the most extraordinary agricultural improvement I have

ever seen. Hygeia came, as she is wont to come, in the train of Ceres."

Another very striking case is cited by Dr. Brown, superintendent of the Eastern Lunatic Asylum, at Williamsburg. "Jamestown Island was formerly the most unhealthy place in this section, and now for eighteen months the people living on the island have been exempt from intermittents. The marshes have been thoroughly drained, and most of the land subsoiled. Intermittents are now very rare also at the asylum, which is attributable to our thorough system of subsoil drainage by pipe tile and our system of surface drainage."

Dr. G. W. Pollard, of King William, says: "I know of two places in the county where intermittent fever has disappeared as the result of systematic drainage of the surface saturation, and many where it has appeared as an effect of neglect of drainage, which is at least a negative evidence." Dr. Christian, of New York, has heard that "at the White House, the estate of Gen. W. H. F. Lee, which has a very level surface, intermittent fever has greatly diminished as the result of superior drainage and tillage."

Dr. S. W. Carmichael, of Fredericksburg, says: "There are numerous places in this section where there has been marked improvement in health since drainage received proper attention. The town of Fredericksburg is a striking example" of the sanitary improvement resulting from the drainage of a marsh. Between the town, and the hills in its rear, there lay a considerable body of undrained marsh lands, the emanations from which infected the whole town. In time "a large canal was cut through this marsh which drained it so effectually that it is now in regular annual cultivation, and malaria no longer emanates from it."

Dr. Barham, of Surry, who in the above classification is recorded as giving a negative answer to this question, says he "has never known drainage to be undertaken specially for sanitary purposes," but thinks he has "seen intermittents disappear to a considerable extent as the result of drainage for agricultural improvement," but the observation was liable to this source of fallacy, that the drainage coincided with the decline of an epidemic of malarial fevers. How much was due to drainage, and how much to the natural decline of the epidemic he cannot say.

Of twenty-three correspondents in the counties between tidewater and the Blue Ridge, eight reply in the affirmative, nine report that they never have seen drainage tried systematically, and

six affirm that their counties, chiefly along the base of the Blue Ridge Mountains, have no intermittents at all.

As to the valley counties, only two correspondents, Drs. Neill, of Clarke, and Brumback, of Page, have observed the connection between improved drainage and the disappearance of intermittents.

V. *What system of drainage is necessary to render your county free from malarious diseases?*

To this question many of the correspondents content themselves with the reply that the most effectual means of drainage should be employed, leaving it to experts in engineering to decide what system will be at the same time effectual and feasible on the score of cost. In quite a considerable proportion of cases it is believed that open ditches will suffice. In others a few deep open ditches with tile pipes communicating with them, will be required. Some of the correspondents attach very great importance to subsoil ploughing and free use of lime. In numerous instances in the tide-water region, where sluggish streams have become obstructed by felled timber, drift wood, etc., the removal of such obstructions is an indispensable condition of the success of any other measure. In a few cases, dykes are needed to keep rivers within their banks.

In many places, private enterprise and capital will avail to render large estates, as for example, Marlbourne under the management of the late Mr. Ruffin, perfectly healthy. In many other places the almost universal obstructions in all the rivers of the county, and the large extent of marshy deposits, put it beyond the power of individuals or voluntary associations to make the needful improvements. The alleged prophylactic influence of the *Eucalyptus globulus* is referred to by more than one, but the apprehension is justly entertained that this tree will not stand the cold of our winters. None appear to have observed the effect of a grove of pine trees in draining the land, as described by Dr. Jos. Wilson, in a paper on "Drainage for Health" in the *Sanitarian*, April, 1874. He ascribed a marvellous effect to a thick grove of young pines. "As the trees get too thick to thrive, the weaker die and decay, root and branch, but much more rapidly and completely the roots, and thus the whole situation of the pine stump becomes a very extensive and effective sink, resembling the artificial drainage sinks already described.

"This action of pine trees in draining the land begins when

the trees are quite small. The first year from the seeds the young trees are a foot high; the second year they are four feet; and the third year they are eight feet; and more than half of those that started are dead and decaying. Every year, while the forest lasts, there are some trees thus going to decay; and they have amazingly deep tap roots. It thus appears easy to make a healthy place for a village almost anywhere—as we have but to scatter a few pine cones, on any suitable piece of land, and wait three or four years. The Naval Hospital at Norfolk, Virginia, is separated from very malarious, naturally pine forest, by a pine grove about three hundred yards wide; and this is found to be amply sufficient. The Eucalypti of Australia are just now exciting much interest as fever-preventing trees; but there certainly is no need of anything better than our southern pines. However, let us have Eucalyptus; one of the species is a very elegant large tree, and there is no danger of too many good things of this kind; and, besides, this tree may be suitable for some places where the pine does not flourish."

If this opinion as to the efficacy of a belt of closely-set pine trees be confirmed by further observations, the problem of rendering miasmatic regions safely habitable will have been solved. Ditching and tilling will in general suffice for agricultural drainage, and a *cordon sanitaire* of a pine grove around the dwelling-house, or in many cases between the latter and a marsh or river bottom, which may be only on one side of it, will suffice to insure immunity to the residents.

Some of the difficulties to be encountered in undertaking any ordinary system of drainage, with a view to make it effective, are indicated in the following passage from Dr. G. W. Semple's communication. "An efficient general system of drainage would require sufficient ditches, commencing at the numerous heads of the sluggish streams bordered by marshes, gradually increasing into larger and larger canals as the branches unite, and levees at the termination of the salt marshes with sufficient tide gates to prevent the influence of the tide. Ditches, of course, are also necessary in every bottom and ravine emptying into the broad waters. The whole county (Elizabeth City) is underlaid by a stratum of marl, and when this stratum rises near enough to be tapped by surface ditches, it acts as a more efficient means of underdrainage; but, when the ditches do not tap this stratum, underdrains would also be necessary for perfect drainage. *This*

system would cost, perhaps, one-half the present value of all the lands of the county, whilst the parties interested are numerous, and have unequal interests. It is, therefore, manifest that it can only be accomplished by corporate combination; but it would pay well for the outlay in the reclamation of many thousand acres of extremely fertile land, in a vast addition to the productiveness of the present arable lands, and in rendering the county free from malarious diseases."

Dr. Page who, as Professor of Agriculture and formerly of the Principles and Practice of Medicine, has paid much attention to the subject of drainage in both its agricultural and sanitary aspects, strongly recommends the liberal use of tile pipes in eastern Virginia; but, in view of the actual impoverishment of the State rendering the general adoption of that system impracticable for the present, advises that all the mill-dams be torn down, and the land now covered by them be drained by ditches, well limed, cultivated, and converted into meadows. With the facilities afforded by steam-power at the present day, he thinks such "foyers" of malaria as mill-ponds ought to be abated in the tide-water region of Virginia as public nuisances.

Dr. Sheilds, of Yorktown, thinks that covered tile drains, so placed as to lower the level of soil saturation three or four feet, are indispensable. The salt marshes he considers to be irreclaimable except, *possibly*, by levees, dykes, and floodgates. Precisely similar opinions are expressed by several correspondents from the salt-water sections. For the counties higher up the rivers and nearer, but still below the head of tide, the problem is equally difficult. Dr. Brockenbrough, of Hanover, thinks nothing short of a very complete system of drainage will suffice to render these counties free from malarious diseases. This system would involve the necessity of straightening some of the smaller streams, removing all kinds of obstructions from all of them, abating all mill-ponds, opening wide and deep main ditches with the use of tiles, according to the British system of "thorough" draining, in the spaces intermediate between the large open ditches, the tiles to be placed at varying distances from ten to forty feet according to the tenacity or lightness of the soil.

It cannot be doubted that some such system will be eventually put in operation for agricultural uses. Such advantages as are possessed by the tide-water section of Virginia will, in the course of time, command the necessary improvements for their utiliza-

tion; but it is quite certain that neither the State nor the individual proprietors of the land will be able for many years to make the necessary outlay for this purpose.

For the counties infested by the beaver, Dr. Southall, of Amelia, thinks that the operations of this animal in building dams may be prevented by keeping the streams and low grounds clear of material suitable for his purpose. "He never cuts down a tree over a certain size, say six inches in diameter, and if he finds no timber near the stream it is not probable that he will transport it from the high grounds."

Until the growth of population and wealth permits the adoption of some such thorough system as is shadowed forth in the communication of Dr. Brockenbrough and others, which are substantially alike, let Dr. Wilson's plan of planting groves of pine trees be tried.

Post-scriptum.—After this report was closed, a communication was received from Dr. A. W. Fontaine, of *Buckingham County*, which has a water line on the James River on the north, northwest, and west sides of fifty or more miles. Into this river numerous tributaries flow, some of which intersect the county and drain it pretty effectually. The portion lying upon the James River is subject to malarial diseases. "It would be safe to say that two-thirds of the county is more or less subject to intermittent and remittent fevers." While there are no large marshes, there are very many small ones interspersed among the streams, sufficient to make from three to five per cent. of the entire area of the county. There are also occasional outbreaks of malarial diseases on the ridges remote from the streams and marshes, which are doubtless attributable to soil saturation. Even in the highest regions of the county, on the rocky ridges (with a yellowish clay subsoil and a thin gravelly soil) there are innumerable "wet-weather springs" which flow most of the winter and spring. Often intermittent fevers are particularly obstinate in such localities. It is noticeable that the fevers prevail immediately after either a *very dry* or a *very wet* season. Drainage has not been applied to a sufficient extent to test fully its results, but in several places there has been a diminution of malarial diseases after drainage for agricultural purposes.

PRINCESS ANNE COUNTY, VIRGINIA,
LONDON BRIDGE, February 3, 1874.

To Prof. J. L. CABELL, M.D.: I have the honor to respond to the questions contained in your circular and communicated to you by Dr. Bell, as follows:—

Question 1. Although an advocate for thorough drainage, for the benefits to be derived from it, both in regard to health and agriculture, I could wish this question were stated in a different form. Among the diseases due in all countries to excessive dampness may be named rheumatism, scrofula, phthisis, and others. The mere fact that insufficient drainage favors the development of our endemics needs no acknowledgment, but the extent in question is subject to qualifications and limitations. Thus, in brief illustration, while a certain degree of moisture is necessary to the existence of malaria, yet, paradoxical as it may seem, the topography of Princess Anne County shows insufficient drainage not always of itself, and alone, the original source of intermittent fevers; for in certain localities, drainage has been known to increase the evolution of malaria till other factors were removed, as, for instance, by thorough cultivation. Besides this, we have had good reasons to suspect that the soil turned up in ditching low grounds contributed much, for more than a year afterwards, towards an increase of fever in the immediate vicinity. Such ditch banks formed elevations above the general swamp level.

Ques. 2. The answer to this question depends upon the exact meaning to be attached to the word *marsh.* In its technical signification, quite a large fraction of the area of this county would come under its designation. If the word be restricted to the *salt marshes* they are, in themselves, very extensive, but we have no data to approximate to the number of acres thus occupied. The words marsh, morass, fen, bog, swamp, poquosin, jungle, and quagmire, are almost if not exact synonyms; they are all applied to low, wet, soft, spongy grounds.

Usage in different regions makes a slight difference in their employment; thus lands and basins that are generally flooded are here termed, when timbered, poquosins, and when not, ponds or lagoons. As the term marsh is frequently used without any qualifying words, in speaking of the salt marshes which exist on the margins of creeks, rivers, and bays, covered with a

sedgy growth and influenced by the tides, it is necessary for scientific precision that the sense in which it is used should be stated. If permitted, very respectfully, to offer an opinion, it would be adverse to the employment of the numerical method, or mere collated statistics, in an investigation of this nature; and perhaps this opinion is justified by some former personal experience.

Ques. 3. This question seems to me not sufficiently explicit, for, as I apprehend it, it involves theory or mere hypothesis, and is almost a leading question, though not so intended. It yet remains to be proved that intermittents are attributable or due to alluvial or diluvial deposits, simply as such. A condition precedent they undoubtedly are, but it does not necessarily follow that they should always give origin to malaria.

Have not paludal and palustral spots been known to exist in more northerly regions of the Union for many generations, without the appearance of fever and ague in the vicinity till of late years? Have not similar observations been recently made in reference to some of our own mountainous districts?

Further, in reply, it may be broadly stated that water in any form is not known to generate malaria, although it is, in some degree, necessary to its generation. At the point of thorough saturation, a marsh ceases to yield malaria in its greatest potency, and above that point, as after great rains, or when flooded, the salubrity of the vicinity is restored and continuous, so long as a superabundance of water prevails over all low grounds, or until new marshes are formed above the margins of the flooded lands. Thus the banks of rivers are apt to be healthy during freshets, while a reverse condition obtains, when in the warm season the waters subside within their beds. Again, for similar reasons, the interior of very wet swamps is demonstrably favorable to health when compared with the higher grounds immediately on their borders, and the more so when the latter are to the leeward. Salt marshes, which are accessible to the daily ebb and flow of tides, are not remarkably obnoxious to intermittents, certainly they are far less in that respect than the moist margins of creeks and rivers which are just above high water, and subject to the oozing of fresh water from the banks. In these latter exposures, and on the borders of lagoons, are met forms of congestive fevers. After the closure of Carrituck Inlet, the waters of the sound freshened to such a degree as to destroy the oysters formerly

abounding there, and at the same time sickness on the northern shores became notably increased.

We therefore conclude that neither marsh deposits nor water, nor both combined, are productive of malaria without some other and more important factors. Every demonstrable fact shows that dampness, rather than saturation, when united with other conditions, among which putrefaction is certainly not an *essential* one, contributes to the propagation of malaria. Instances, as described by Fergusson, are met with, of places high or dry and sandy, which are sickly, but, as his theory seemed to be based upon putrefaction, he failed to perceive the accessories. These elevated sites, often very remarkable for cleanliness, are subject to earlier radiation and deposition of dews, and are in the course of prevailing winds blowing from some foci of malarious emanations. We may cite as instances the bluffs on some of our rivers, Monte Pincio in Rome, etc. With regard to soils, argillaceous ones are more retentive of moisture, especially when a substratum of clay underlies a sandy surface, for in the latter case there may be below all the conditions of marsh. Without dwelling longer on this topic, I may be permitted to advert to some facts demonstrable both by experience and observation.

Malaria is somewhat denser than atmospheric air, but rises under certain hygrometric conditions and floats in a denser stratum; its horizontal range is more limited than one might have supposed, less over water than on land, rarely over 500 yards, though, under exceptional circumstances or strong winds, it may attain a much greater distance; its vertical range may extend to 300 feet or even 500 feet; it is produced under a temperature of 60° to 80° F. at the maximum; requires some light, as absolute shade greatly moderates its production; is arrested in its progress by hills, trees, and even shrubs. Certain vegetable substances, *e. g.*, cabbages, turnips, potatoes, flax, hemp, indigo, coffee, etc., when decayed and exposed in heaps to moisture, heat, and moderate light, with attendant mouldiness, seem to unite all the conditions necessary to produce malaria in this locality, judging from the diseases that are unquestionably generated from such foci.

Ques. 4. It has been well known here for many years that thorough drainage by open ditches (for we have none covered) has *almost* banished intermittent fever from large tracts of level spongy soils that were formerly so moist as to be but poorly productive of cereals, but are now among our best farming lands.

The same results attained on the other continent, *e. g.*, the fevers of Lincolnshire and Holland, have been corroborated by personal observations on the sea-board, from the Chesapeake to Florida. I have ascertained that many situations, otherwise healthy, had been ruined by inconsiderate clearings, or by the construction of mill-ponds and reserves; and, again, that some of these had been subsequently restored to health by promoting the growth of forest trees, by abating nuisances, and by drainage and proper tillage. Indeed, the conclusion reached in this direction would establish the position, that in this latitude, malaria is abated in proportion as the soil is best adapted to the production of the cereals. Drainage, then, to be efficacious, must reduce the persistent moisture much below a point without the attainment of which malaria cannot be produced.

Ques. 5. I do not think any system of drainage hitherto devised, including dykes and floodgates to our salt marshes, would *entirely* free this county from malarious diseases, though it would prove an incalculable blessing even to diminish the rate of sickness. The experience we have had with blight, rust, mildew, and dry rot, under atmospheric changes, has caused us to inquire whether there be not another essential element of malaria to arrest our attention besides the physical, or rather the chemical reactions of water and marsh deposits. In this view we must bear in mind the attempt to drain the Pontine Marshes near Rome which failed to moderate in the least the prevalence of intermittents in that city. Formerly, I was led to the opinion, from cases brought under my notice, that stagnant water, which contained matter in a state of decomposition, and sometimes aquatic vegetations possessing a mossy character, were capable of developing malarious diseases when drank, but, on nearer investigation, there proved to be a dynamic fever with strong gastro-enteric symptoms analogous to, but not identical with, such as arise from decomposed alimentary substances.

Hoping what I have written may be of some little service,

I am very truly yours,

A. G. TEBAULT.

REPORT

ON

AMERICAN MEDICAL NECROLOGY.

REPORT ON AMERICAN MEDICAL NECROLOGY.

UNIVERSITY OF MICHIGAN, DEPARTMENT OF MEDICINE AND SURGERY.
Ann Arbor, June 1st, 1874.

WM. B. ATKINSON, M.D.,
Permanent Secretary American Medical Association.

DEAR SIR: The Chairman of the Committee on Medical Necrology, with regret, begs leave to say, in explanation of the extreme meagreness of the material submitted, that, having been compelled, by ill health, to be absent from home the larger part of the period since he received notification of his appointment, he has held no communication with his associates of the Committee, and for the same reason has been unable to make personally any contribution to the report.

Respectfully submitted,
A. SAGER.

DISTRICT OF COLUMBIA.

THOMAS MILLER was born in the town of Port Royal, Virginia, on February 18th, 1806. His father, Major Miller, came to Washington, with his family, in 1816, and became attached to the navy department during the administration of President Madison.

Dr. Miller received his early education under the care of the Jesuits at the old Washington Seminary, afterwards known as Gonzuga College. His medical studies were begun with Dr. Henry Huntt, a leading physician of the time. In 1827 he went to Philadelphia, and received his degree in 1829 at the University of Pennsylvania. In the same year he commenced the practice of medicine in Washington, his office being in one of the famous buildings known as "Newspaper Row." From this date his life was an uninterrupted current of professional work and devotion to the manifold duties of a physicians' life. A rehearsal of the events of his career would present an epitomized history of the medical profession of Washington for the last forty years, inasmuch as there was, during this period, no project looking to the advancement of medicine with which he was not associated.

In the year 1830, Dr. Miller united with six others to form the Washington Medical Institute, for the purpose of giving instruction to students, and in 1832 he began a course of teaching in practical anatomy. In the same year, also, he was one of the physicians to the Central Cholera Hospital during the prevailing epidemic. In 1833 he was one of the original founders of the Medical Association of the district, and at the time of his death held the presidency of this body. In this year, also, his marriage took place with the daughter of the eminent lawyer, General Walter Jones.

In 1838 Dr. Miller's name appeared in the list of incorporators of the Medical Society, and ever afterwards was an active member in furthering its interests. His associates deemed him worthy of election to the highest office after many years of faithful service in their ranks. In 1839 he assumed the professorship of Anatomy in the National Medical College, and for twenty years labored as a teacher with distinction and success. On his retirement he was made emeritus professor and president of the faculty.

In 1841 the Pathological Society was organized, and Dr. Miller was its first president. He was, subsequently, one of the attending surgeons to the Washington Infirmary, a hospital sustained by the professors of the National Medical College. For many years he was a member of the Board of Health, and of the Board of Aldermen, and, at the time of his death, was one of the consulting staff of Providence Hospital and of the Children's Hospital. Although the institution just mentioned was the last with which his name became associated, yet he exhibited the same zeal and sympathy in securing its success as he had uniformly shown in similar undertakings.

During all these years he was assiduously engaged in practice, and gained the regard of all by his professional ability. Among his brethren he was well known for a cordiality and ease which repelled no one from his companionship. He found time to sustain all social relations, and neither age nor failing strength offered any bar to his personal interest in all professional matters. His death, which occurred September 20th, 1873, was an event of sad moment in the annals of the city. To do one's duty for forty years amidst pain and suffering is a lot not vouchsafed to many, and few are borne to the grave as was he with the attendant grief and affection of an entire community.

BODISCO WILLIAMS was born and educated in Georgetown, D. C. He studied medicine with Dr. Joshua Riley, and graduated at the National Medical College in Washington, in the year 1862. Soon after he entered the Confederate army as assistant surgeon, and served during the war in this capacity. He returned to Georgetown, and began the practice of medicine, but did not live long to enjoy the success which he seemed about to reach. His death occurred on December 23d, 1873, at the age of thirty-three.

Dr. Williams was noted for a pleasing manner and gentlemanly address which gained for him many friends. His untimely death was much deplored by all who had ever known him.

GEORGE MCCAULEY DOVE, second son of Marmaduke and Margaret Dove, was born in Washington, D. C., on October 5th, 1817. He began the study of medicine with Dr. Kearney, U.S.N., and completed his medical course at the University of Pennsylvania, where he graduated in 1839. Soon after, he settled in Washington, where he practised medicine until his death, the only interruption being during the Mexican War, when he served as surgeon in the United States Army.

Dr. Dove occupied a prominent position as a practitioner, and held many positions of trust and importance. For many years he was physician to the "Washington Almshouse," and for some years preceding his death, was one of the attending physicians to Providence Hospital. For a considerable period of time, he filled the chair of the Theory and Practice of Medicine in the National Medical College, and did much towards sustaining the reputation of this institution. During the war he had charge of one of the military hospitals, and at various times was attached to the Board of Health, filling the office of both Secretary and President.

His death was unexpected, and occurred on January 30th, 1874. Dr. Dove was much esteemed for his integrity of character, and for his many amiable qualities. His life was devoted to the routine of professional labor, and in every relation he conducted himself so as to leave none but mourning friends behind him.

SETH I. TODD was born in Washington, D. C., on August 3d, 1842, his father being a prominent citizen of that city, and his wife, a daughter of Dr. Dove, whose death we have just recorded. He began the study of medicine under Dr. James J. Waring, now

of Savannah, Ga., and after spending some time in Philadelphia, he went to Paris, where he devoted himself to visiting the hospitals. Returning to Washington, he took his degree at the National Medical College, and soon afterwards became one of the auxiliary faculty of this institution. As a young practitioner he showed much enthusiasm, and was one of the most active members of the Clinico-pathological Society, serving as secretary during the whole period of his membership.

After being engaged for six years in practice, he was forced to retire in consequence of ill-health, and later was appointed to the office of secretary of the Arlington Insurance Company. Here he exhibited the same devotion to duty and honorable ambition which characterized his career as a physician. A short illness terminated his life at the early age of thirty-two, on March 13th, 1874.

RICHMOND JOHNSON came to Washington from Annapolis, Md., about the year 1800. He studied medicine, and entered the Navy as surgeon's mate in 1812, resigning in 1814. From 1834 to 1836 he was secretary to the Medical Society of the District of Columbia, but soon became permanently attached to a government office in the capacity of clerk. His death took place in his eighty-third year, on March 12th, 1874.

PATRICK CROGHAN, a native of Ireland, came to America in the year 1859. He had studied medicine in Dublin, and was a surgeon in the English merchant service, a position which enabled him to see much of the world. At the breaking out of the war, he entered the service as a private, but soon was made surgeon, doing duty at the Judiciary Square Hospital, in Washington.

Dr. Croghan practised medicine until within a few days of his death. He had a large number of patients among his own countrymen, all of whom were his enthusiastic admirers. He was much beloved by all who at any time came under his care, for the warm interest which he had in their welfare. He died suddenly on March 27th, 1874.

NEW JERSEY.

LEONARD LAWRENCE, of Cedarville, New Jersey, died in Philadelphia, 31st May, 1873, aged seventy-four years.

JOHN F. WARD died at his residence in Newark, 11th July, 1873, in the fifty-eighth year of his age. He was a member of the District Medical Society of Essex County.

LUKE HAZZARD, of New Brunswick, died 28th July, 1873, in the sixty-fifth year of his age.

JACOB H. VANDERVEER died at Long Branch, 20th of August, 1873, in the fifty-sixth year of his age.

HENRY B. NIGHTINGALE died at his residence, Rosemont, 10th September, 1873, aged about fifty years. He was the son of Rev. ——— Nightingale, Baptist minister at Doylestown; graduated in Philadelphia; commenced practising at Rosemont 1859; was a respected member of the District Medical Society of Hunterdon County; in 1862 was its president; in 1863 its secretary; and one of the Board of Censors; a scientific and judicious practitioner. He left a widow and large family of children to mourn his loss. He was a member of the Baptist Church.

JOHN HONEYMAN died at his residence, New Germantown, 2d of January, 1874, in the seventy-sixth year of his age. He was born in the immediate vicinity of New Germantown, where he spent all his lifetime. He read with Doctor William Johnson, of Whitehouse, and attended lectures in the University of Pennsylvania, and commenced practice in 1824, which he continued until taken down with his last illness (inflammation of the kidneys) twelve days before his decease. He was many years a member of the District Medical Society of Hunterdon County.

As a physician he was successful, and his counsel was sought after by neighboring practitioners. In the sick-room, pleasant, quiet, and tender, "soothing where he could not heal."

A strong advocate for the temperance cause. He was long a member of the Lamington Church, and for the last nine years a ruling elder in it. He left a widow and four children—one daughter and three sons—none engaged in their father's calling.

LEWIS C. COOK died at his residence in Hachettstown, 10th January, 1874, aged fifty-five years. He was the son of Silas Cook, M.D., for many years a practitioner in Easton, Pa., and brother of Joseph Cook, M.D., of Washington, Warren County, and brother

of John Cook, M.D., of Hachettstown; he was a popular and skilful practitioner, and had the confidence of a large circle of patients in the community in which he lived. He was a member of the District Medical Society of Warren County.

HENRY VAN DERVEER died at his residence near Somerville, 13th February, 1874, aged eighty-two years. He was the son of Lawrence Van Derveer, M.D., of Roycefield, Somerset County, N. J., who was a prominent physician and whig during the Revolutionary war. Dr. Henry was in early and middle life largely engaged in practice, and had the confidence of all who knew him. At that time he was a member of the District Medical Society of Somerset County, and for some time one of its Board of Censors. In 1836 he was president of the Medical Society of New Jersey.

SAMUEL MCKNIGHT SMITH died in Perth Amboy, 3d February, 1874, in the seventy-first year of his age. He was a member of the District Medical Society of Middlesex County.

SAMUEL ABERNETHY died at his residence, Rahway, 13th February, 1874, in the sixty-eighth year of his age.

ILLINOIS.

CHARLES JAMES TAGGART was born in Byron, Gennesee County, New York, in June, 1824, and died at Rochford, Illinois, April, 1873, aged forty-nine. His father, a man of more than ordinary business capacity, had come with the early pioneers into that region then known as "The West." The boy soon showed those qualities of a superior mind which distinguished his subsequent career, and plans were early formed to secure for him a liberal education.

He had advanced so far as to be about ready for college when the death of his father interrupted his course, and threw upon the youth of fifteen years the grave responsibilities of closing up a complicated business, and watching for the welfare of his widowed mother and her three younger children. Well and faithfully did he discharge those responsibilities, and through all his life he was found ever the devoted son and brother, as the stay of the household, making their interests always his own. Some years passed before he could think of resuming his studies. Then

it seemed too late to take the preliminary discipline of a full course at college.

In after life he often expressed his regret for the lack of this which he esteemed most highly; yet in his case it was evidently compensated in part by the development of manly qualities under the pressure of early responsibilities. When released from other cares he turned his attention at once to the study of medicine. Intensely interested in his studies he applied himself to them with all his soul, determined, as far as possible, to make his own whatever pertained to his chosen profession. He attended lectures first in Boston and then in New York, where he was graduated in 1850, and commenced the practice of medicine at Beloit, Wisconsin, in the summer of that year. Naturally modest and unassuming, yet self-reliant, he sought no outside influences to help him on, but depended solely on his own merits and his consciously high aim to open his way and insure success. It was not long before his worth began to be known and appreciated. Steadily and surely he gained the confidence of the community, and but few years had passed when a leading place among the physicians of the region was cheerfully and deservedly awarded to him.

The secret of his success was his single-eyed devotion in love to the duties of his profession, and his naturally quick perception and sound judgment respecting the various phases of disease and the remedies suited to counteract them. He was a constant student, keeping himself well read up in all that came within his reach, of scientific discovery and recent invention bearing on medical science, and making each case a matter of special study. His convictions were clear and positive, and his action prompt and vigorous. He spared no pains to fit himself for his work. Twice he broke away from a lucrative practice to spend a winter in attending medical lectures, that he might bring to his responsible duties the latest discoveries in medical science.

Three years before his death he removed to Rockford, Illinois, with the view to escape the long rides which consumed his time and exhausted his energies, holding himself now to a more strictly city practice.

His reputation had preceded him, and, in a very short time, he had won the confidence of the entire community.

Called to a case suffering from one of the sequelæ of an abortion, a retained placenta partially decomposed, he was inoculated

through a slight abrasion of the right hand not then noticed. Erysipelas followed, then pyæmia, pulmonary and hepatic abscess, a lingering and painful illness, borne with patient Christian fortitude for almost twelve long weeks, then death.

Dr. MOSES BARRETT was born at Rowe, Franklin County, Massachusetts, June 28, 1816, and died November 9, 1873, aged fifty-seven.

He was graduated at Berkshire Medical College in 1836, and settled in Franklin County, Massachusetts, where he was engaged in the practice of medicine for several years, going to Le Roy, Genesee County, New York, in 1842, devoting his time to his profession, to literary pursuits, and to the educational interests of the community in which he had settled, filling the place of superintendent of schools, and giving to his varied duties all his time and attention till his health failed, and he removed to Waushara County, Wisconsin.

Here, for several years, a quiet life was spent with his books and family, agricultural and horticultural pursuits, occasionally giving of his stores of medical knowledge and experience to aid his professional brethren in their difficult cases. But eventually, with restored health, the love of his profession led him to Milwaukie to resume practice. In 1860 he was appointed Superintendent of the State Reform School at Waukesha.

For five years, with characteristic energy and perseverance, he performed the duties of superintendent, chaplain, and physician, to the entire satisfaction of all who had knowledge of his work —always kind but firm. Many useful citizens will ever bless his name and memory for the kind words and fatherly care that reclaimed them.

Returning to his practice he was at length invited to fill the chair of Chemistry and Natural Sciences at Ripon College, a position for which he was eminently qualified. But he was permitted to do no more than show how well the choice had been made. On the 9th day of November, 1873, after an illness of ten days, he exchanged the toils of earth for the joys of heaven, dying as he had lived, a noble, consistent Christian.

ORSON QUINCY HERRICK was born in Hudson County, Ohio, July 8, 1831. His father was a plain, unassuming farmer, but a man in whom his neighbors placed great confidence. The doctor's

preliminary education was very fair, but not scholastic. He graduated at the University of Michigan in 1852. He moved to Kansas, in Edgar County, in the fall of 1855, where he practised his profession until his death, which occurred August 19, 1873. He was married to Elizabeth Kesler the 25th day of December, 1855. He leaves his precious wife and an only son, whom he named for the distinguished Prof. Mott. He is a very promising young man.

The doctor was a member of the Christian Church. He was a friend to the poor; a man of rugged constitution; full of all good impulses; energetic and competent in his profession, and was as much deplored by the community as it was possible for any one to be. His industry was proverbial—never neglecting his professional duties for pleasure or any other cause. He had some inclination to surgery, and performed a few brilliant operations. He was ever courteous to his professional brethren, and loved his profession better than life.

FLEMING RICE PAYNE, of Marshall, Illinois. Dr. Payne was born in Shelby County, Kentucky, in February, 1821; had a fine preliminary education. Graduated at the Medical Department of Louisville University, and died December 2, 1873.

Only a week or two before, he attended the annual meeting of the Æsculapian Society of the Wabash Valley, of which he had been a member twenty-three years, but owing to ill health and press of professional business, he had not attended for some years. He was esteemed one of the very best men in the profession. He was a writer of no mean pretensions, but principally for medical journals. He possessed all the elements of a Christian gentleman, leading an almost blameless life, and none more useful.

VIRGINIA.

ALBERT SNEAD was born in Hanover County, Virginia, July 3d, 1807, and died in the city of Richmond, of cardiac disease, November 6th, 1873. He received the degree of M.D., from the University of Pennsylvania, about the year 1829.

In 1832 he removed to Richmond, where he was for some time engaged in a manufacturing business; but after a brief trial of this, he resumed the practice of his profession, which he pursued with unwearied diligence, and with scarcely an interval of repose, until a short time previous to his decease. He soon attained a

high position in the estimation of the community, as well as of his professional brethren, by his skill and conscientious devotion as a physician, and the excellences of his manly and upright character, and he retained to the last the unreserved confidence and respect of a large circle of patrons and friends. He was for fourteen years health officer of the city, and physician to the City Hospital. He was also for many years a member of the city council—a position not won by political intrigue or the arts of popularity, but conferred spontaneously by a people who rightly estimated his sound judgment, his public spirit, and his integrity of character.

Dr. Snead had the interest and honor of his profession deeply at heart, and took an earnest part in all associated efforts for their advancement. He was a member of the Medical Society of Virginia, of the former Medico-Chirurgical Society of Richmond, of the Richmond Academy of Medicine (of which he was at one time president), and in 1852 was a delegate from the State Society to the American Medical Association. In the proceedings and discussions of the Richmond Academy of Medicine he took a zealous and leading part, and here, during the last seven years of his life, his *confrères* were continually impressed with the clearness and vigor of his intellect, his strong and decided views of theory and practice, his uncompromising conservatism in professional ethics, his kindliness of heart, and amenity of manners.

The same salient points of character which made Dr. Snead prominent elsewhere, naturally gave him a leading position in the religious denomination to which he belonged, and he was for many years a member of several official boards of the Baptist Church, in all of which the influence of his energy, zeal, and practical judgment was sensibly felt.

His pastor thus briefly and happily sums up his moral and religious character: "He was a man of firm and conscientious convictions, but of tender heart; a firm, fast friend; a frank, open opponent of what he believed to be wrong; a generous and loved benefactor of the poor; a prudent adviser, an active Christian. His impulses were quick, and his faults but the outcroppings of a nature too open for concealment, too firm in convictions to compromise with known wrongs."

JAMES MAY was born in Dinwiddie County, Virginia, April 11th, 1798, and died in Petersburg, November 15th, 1873. The

following sketch is taken almost literally from an obituary notice, by his friend Dr. J. H. Claiborne :—

Dr. May graduated at the University of Pennsylvania in the spring of 1820, and at once commenced the practice of physic at Christiansville, in the county of Mecklenburg, in this State. In the course of a few years he removed to Petersburg, where he united in practice with his brother, the late Dr. Benjamin H. May, a physician who, though blind, attained to rare excellence in his profession, and who was known for thirty years as one of the most skilful and sagacious medical men in the State. Dr. James May survived his brother about fifteen years, and for fifty-three years was actively and zealously engaged in the humane and self-denying labor to which he had devoted his life.

Indeed, he was rarely known to take a recess or holiday of even a few days' duration, and to the last, within a week of his death, he might have been seen daily on the streets trotting along on his time-worn old sorrel—he always practised on horseback —and literally fell in the ranks.

Dr. May enjoyed to a large extent, both as a man and as a physician, the confidence of the community in which he lived so long, and amongst his professional brethren was always esteemed for his skill, his sagacity, and his sound practical knowledge and treatment of disease. By prudence and frugality he amassed a handsome fortune, but no man ever lived who was less moved to display by the seductions of wealth, or less allured to the softness and self-indulgence which he could so well have afforded. Plain in his dress, primitive in his habits and his tastes, he lived one of the last representatives of an age of purer metal—call it iron or brass—than the present, and died an example in many things to the profession which he adorned, and the people to whom he gave half a century of labor.

Henry Howard was born in Frederick County, Maryland, May 28th, 1792, and died at Charlottesville, Virginia, March 2d, 1874, aged nearly eighty-two years. He received his education at an academy in the county of his birth, studied medicine in the office of Dr. Warfield, and graduated in the medical department of the University of Pennsylvania. From 1813 to 1837 he practised his profession at Brookeville, Montgomery County, Maryland.

From 1837 to 1839, Dr. Howard filled the chair of Obstetrics and Diseases of Women and Children in the University of Mary-

land. In the latter year he was elected Professor of Medicine and Obstetrics in the University of Virginia, to fill the vacancy created by the retirement of Dr. R. Eglesfield Griffith, and continued to discharge the duties of the position with unwearied assiduity and conscientious fidelity until 1867, when the infirmities incident to advancing age compelled his resignation. He had already, some fifteen or twenty years previously, found his strength unequal to the labors of an active medical life, and had therefore withdrawn from the practice to devote himself exclusively to teaching.

Subsequently to his retirement from his professorship, he received an emphatic proof of the confidence entertained by the community in his integrity and sound judgment, in his election to the presidency of the Citizens' National Bank of Charlottesville, which position he occupied at the time of his death.

During his twenty-eight years' service in the medical department of the University of Virginia, Professor Howard bore an important part in the education of a large number of physicians, many of whom have won success and reputation in various fields of professional occupation—whether in civil practice, in medical teaching, or in the public service. We may well believe that it was a source of proud satisfaction to this veteran teacher, in the closing years of his life, to have enjoyed the honor of a prominent connection, for so long a period, with a school so distinguished for the thoroughness of its instructions and the character of its graduates: and we may feel assured that the numerous alumni of that school who received the benefit of his faithful labors will cherish his memory with respect and veneration.

ALEXANDER R. PRESTON was born in Washington County, Virginia, on the 8th of December, 1805, and died March 5th, 1874. After completing his collegiate education at Washington College, Tennessee, he studied medicine under Dr. Graham, of Abingdon, Virginia. He received his degree at the Transylvania University, Lexington, Ky., in March, 1827, and commenced practice at Bellefonte, Alabama, in partnership with Dr. Davis of that place. This association continued until October 13th, 1829, when Dr. Preston returned to his native State and county, and in the following month established himself permanently in practice in the town of Abingdon.

In the winter of 1847–48, he visited Philadelphia, and attended medical lectures at the University of Pennsylvania, and the Jeffer-

son Medical College—receiving from the last-named institution, at the close of the session, the degree of M.D. After his return home, he continued to practise his profession until 1868 or 1869.

About the commencement of the late civil war, he was elected by the people of Washington County to represent them in the Legislature. At the time of his death, he was President of the Abingdon Academy of Medicine, the proceedings of which body, on the announcement of his decease, afforded honorable proof of the high estimation in which he was held by his professional brethren, and placed in strong relief the prominent traits of his character. The resolutions unanimously adopted on that occasion speak of the deceased president as "the oldest physician of our Association—a physician noted for his skill, remarkable for his kindness and gentleness in the sick-room, distinguished for his charity to the poor, and his gentlemanly bearing in all the walks of life: While he was an earnest and energetic practitioner, until the infirmities of age caused him, in a measure, to withdraw from the active pursuit of his profession, he scorned any undue advantage to forward him in his vocation: Always kind and courteous to his juniors, frank and open with his compeers, he died rich in honors as well as ripe in years, having been elected by his fellow-citizens to various positions of honor and trust."

WEST VIRGINIA.

HENRY JOSEPH WIESEL, the son of Prof. Michael and Mary E. Wiesel, was born in the city of Baltimore on the 22d April, 1840. Soon after Henry's birth, his parents removed to Cumberland, Maryland. At an early age he exhibited quite a talent for music, composing a waltz at eleven years of age, which was deemed worthy of publication. The next year he composed a series called "The Stages of Matrimony." Among the last was "A mass" which was much admired. Several of his productions are now used in St. Patrick's and St. Peter's and St. Paul's Churches, Cumberland, where he was formerly organist. His musical compositions amount to about one hundred and fifty.

From 1858 to 1861 he was Professor of Music in St. Mary's College, Cincinnati. In the latter year he returned to Cumberland, and began the study of medicine under Drs. Thomas A. Healey and Samuel P. Smith; completing his studies at Bellevue Medical College, New York City, graduating in 1862. Dr. Wie-

sel immediately entered the service of the United States as Assistant Surgeon, and was stationed at Clarysville Hospital—continuing in the service until the end of the war—soon after which he located in the city of Wheeling, where he practised until his death on 4th November, 1873.

Dr. Wiesel was married September 25, 1872, to Miss Mary G. Breslin, daughter of John G. Breslin, Esq., of Charleston, West Virginia.

During his residence in Wheeling, he was health officer of the city, and also was Secretary of the "Wheeling and Ohio County Medical Society;" and one of the Vice-Presidents of the "Medical Society of the State of West Virginia." He contributed a paper to the latter Society, describing a "New Stethoscope" of his own invention, also "A Report of Five Cases of Trichonosus," which were published in the *Transactions* of said Society.

Dr. Wiesel died of acute rheumatism, with pericarditis. He was much beloved for his charity and Christian virtues, and was popular with all classes.

UNITED STATES ARMY.

Assistant Surgeon THOMAS MCMILLIN was a native of Kentucky, and was commissioned Assistant Surgeon August 19, 1862, being then twenty-two years of age.

He served with the Army of the Potomac until January, 1864, after which he had charge of Judiciary Square Hospital, Washington, D. C., and then, until the close of the war of the rebellion, of the hospital transports Baltic and J. K. Barnes; subsequently he was on duty in the department of California. He died April 6, 1873, of disease of the heart, while in camp at Tule Lake, being, at the time, the chief medical officer of the expedition against the Modoc Indians. Assistant Surgeon McMillin was brevetted captain and major for faithful and meritorious services during the war, March 13, 1865. Two years later (March 13, 1867) he was brevetted Lieutenant Colonel for meritorious and distinguished services during an outbreak of cholera among a detachment of recruits *en route* from New York City to San Francisco.

In the official report of his death, the Medical Director of the Department of California, says: "Dr. McMillin has been on duty in this department since early in 1868, and has always been

characterized by a thorough devotion to duty. He was a gentleman of superior professional attainments, of great private worth, and in his death the corps has lost one of its brightest ornaments, and the army an accomplished officer."

At a meeting of the officers serving with the troops against the Modoc Indians, immediately after Dr. McMillin's death, the following preamble and resolutions were unanimously adopted:—

Whereas, The Almighty has, in his pleasure, removed from among us our late companion and brother officer, Assistant Surgeon Thomas McMillin, U. S. Army, medical director of the expedition operating against the Modoc Indians, who was endeared to us by his uniform kindness, amiability, and many noble qualities; and, whereas, it has come lately to our belief that while suffering from a disease contracted from exposure in the service, he has nobly, and, without hesitation, performed all duty required of him, both in camp and in the field, and at last became its victim when in the face of the enemy; therefore be it

Resolved, That while we greatly deplore his early death, and look upon it as a great loss, not only to ourselves, but to the army at large, and the profession of which he was a member, and to which he was an ornament, we entertain the hope that his gain is beyond our ability to express.

Resolved, That we take this method to make known and extend our heartfelt sympathy to his family and relatives in their sad bereavement.

Resolved, That a copy of these resolutions be sent to the relatives of our deceased comrade, the *Army and Navy Journal*, *Louisville Courier-Journal*, and *San Francisco Alta*, for publication.

(Signed) EDWARD R. S. CANBY, Brigadier General,
President.

ARTHUR CRANSTON, 1st Lieut. 4th Artillery,
Secretary.

Surgeon MADISON MILLS was born at Catharine, Tioga County, New York, October 15, 1810; commissioned Assistant Surgeon, April 1, 1834, and Surgeon, February 16, 1847. He died at Fort Columbus, New York Harbor, April 28, 1873, of perityphlitis. The Surgeon-General has published the following announcement of his death:—

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, May 5, 1874.

The Surgeon-General announces with regret to the Medical Corps the death of one of its senior members, Surgeon and Brevet Brigadier General Madison Mills, which occurred at Fort Columbus, New York Harbor, on the 28th of April.

Receiving his commission as Assistant Surgeon U.S.A., in April, 1834, Surgeon Mills' service extended over a period of thirty-nine years, during which it was his fortune to take part in the Florida war, the war with Mexico, the Utah Expedition of 1858 (as Medical Director), and the war of the Rebellion. He was Medical Director of the Department of Tennessee (General Grant's Army) at the time of the siege and surrender of Vicksburg, and in December, 1864, was appointed Medical Inspector General, the duties of which position he discharged most satisfactorily. In November, 1864, the brevets of Lieutenant-Colonel and Colonel, and in April, 1865, that of Brigadier-General were conferred upon him for faithful and meritorious services.

Possessed of unflinching determination and courage, and guided by professional abilities of a high order, his administration of the trusts confided to him was marked by a prompt efficiency and sound judgment that secured successful results, even under the most adverse circumstances.

J. K. BARNES,
Surgeon-General U. S. Army.

Surgeon HORACE R. WIRZ was commissioned Assistant Surgeon, December 5, 1846, and Surgeon, April 16, 1862. He died at San Francisco, California, January 24, 1874, of epithelial cancer of the cheeks. Surgeon Wirz served with distinction during the war of the rebellion. He was Medical Director of the Department of West Virginia during the winter of 1861-62, and afterwards successively, Medical Director of the army of the Tennessee, of the department of the Northwest, and of the department of the South. March 13, 1864, he was brevetted Lieutenant-Colonel for faithful and meritorious services during the war.

Surgeon JOSIAH SIMPSON was born at New Brunswick, Middlesex County, New Jersey, February 27, 1815; commissioned Assistant Surgeon, July 11, 1837, and Surgeon, August 12, 1855. He died at Baltimore, Maryland, March 3, 1874, of dia-

betes mellitus. Dr. Simpson was brevetted Lieutenant-Colonel and Colonel, March 13, 1865, for faithful and meritorious services during the war. The Surgeon-General has published the following notice of his death :—

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, March 5, 1874.

'With deep regret, the Surgeon-General announces to the Corps the death of Brevet Colonel Josiah Simpson, Surgeon U. S. A., which occurred at Baltimore, Md., March 3, 1874. Mentioned, in most flattering terms by General Zachary Taylor in his report of the Battle of Okeechobee in December, 1837, and by Generals Scott and Worth in Mexico, Surgeon Simpson, during nearly forty years' service, retained his early reputation as an efficient and accomplished officer and exemplary man, leaving to the Medical Corps, the advancement of whose best interests he made his rule of action, the example of an unsullied life.

J. K. BARNES,
Surgeon-General U. S. Army.

Surgeon LEVI H. HOLDEN was commissioned Assistant Surgeon, June 15, 1840, and Surgeon, April 23, 1860. He was placed upon the list of retired officers October 27th, 1868, and died at Vineland, New Jersey, May 12, 1874, of "chronic brain disease." Surgeon Holden accompanied the army of invasion and occupation during the Mexican war, and served with credit during the war of the rebellion. He was in charge of the Circle Hospital, Washington, D. C., from June, 1861, to June, 1862; subsequently he was successively, medical director of the department of West Virginia, the department of the Ohio, and the department of the Monongahela. March 13, 1865, he was brevetted Lieutenant-Colonel for faithful and meritorious services during the war.

PLAN OF ORGANIZATION

FOR A

NATIONAL MEDICAL ASSOCIATION.

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Whereas, The Medical Convention, held in the city of New York, in May, 1846, have declared it expedient "for the medical profession of the United States to institute a National Medical Association;" and,

Inasmuch as an institution so conducted as to give frequent, united, and emphatic expression to the views and aims of the medical profession in this country, must, at all times, have a beneficial influence, and supply more efficient means than have hitherto been available here for cultivating and advancing medical knowledge; for elevating the standard of medical education; for promoting the usefulness, honor, and interests of the medical profession; for enlightening and directing public opinion in regard to the duties, responsibilities, and requirements of medical men; for exciting and encouraging emulation and concert of action in the profession, and for facilitating and fostering friendly intercourse between those who are engaged in it: therefore,

Be it resolved, In behalf of the medical profession of the United States, that the members of the Medical Convention, held in Philadelphia in May, 1847, and all others who, in pursuit of the objects above mentioned, are to unite with or succeed them, constitute a National Medical Association; and that, for the organization and management of the same, they adopt the following *Regulations*:—

I.—TITLE OF THE ASSOCIATION.

This institution shall be known and distinguished by the name and title of "The American Medical Association."

II.—MEMBERS.

The members of this institution shall collectively represent and have cognizance of the common interests of the medical profession in every part of the United States; and shall hold their appointment to membership either as delegates from local institutions, as members by invitation, or as permanent members.

The *Delegates* shall receive their appointment from permanently organized medical societies, and such county and district medical societies as are recognized by representation in their respective State societies, and from the medical department of the army and navy of the United States.

Each delegate shall hold his appointment for one year, and until another is appointed to succeed him, and shall participate in all the business and affairs of the Association.

Each State, county, and district medical society, entitled to representation, shall have the privilege of sending to the Association one delegate for every ten of its regular resident members, and one for every additional fraction of more than half that number; *Provided*, however, that the number of delegates from any particular State, Territory, county, city, or town shall not exceed the ratio of one in ten of the resident physicians who may have signed the Code of Ethics of this Association. The Medical Staffs of the army and navy shall be entitled to four delegates each.

No individual who shall be under sentence of expulsion or suspension from any State or local medical society of which he may have been a member, or whose name shall have been, for non-payment of dues, dropped from the rolls of the same, shall be received as a delegate to this Association, or be allowed any of the privileges of a member, until he shall have been relieved from the said sentence or disability by such State or local society, or shall have paid up all arrears of membership; nor shall any person not a member and supporter of a local medical society, where such a one exists, be eligible to membership in the American Medical Association.

No one expelled from this Association shall at any time thereafter be received as a delegate or member, unless by a three-fourths vote of the members present at the meeting to which he is sent, or at which he is proposed.

Members by Invitation shall consist of practitioners of reputable

standing from sections of the United States not otherwise represented at the meeting. They shall receive their appointment by invitation of the meeting, after an introduction from, and being vouched for by, at least three of the members present, or three of the absent permanent members. They shall hold their connection with the Association until the close of the annual session at which they are received; and shall be entitled to participate in all its affairs, as in the case of delegates, except the right to vote.

The *Permanent Members* shall consist of all those who have served in the capacity of delegates, and of such other members as may receive the appointment by unanimous vote, and shall continue such so long as they remain in good standing in the body from which they were sent as delegates, and comply with the requirements of the By-laws of the Association. Permanent members shall at all times be entitled to attend the meetings, and participate in the affairs of the Association, so long as they shall continue to conform to its regulations, but without the right of voting; and, when not in attendance, they shall be authorized to grant letters of introduction to reputable practitioners of medicine residing in their vicinity, who may wish to participate in the business of the meeting, as provided for members by invitation.

Every member elect, prior to the permanent organization of the annual meeting, or before voting on any question after the meeting has been organized, must exhibit his credentials to the proper committee, and sign these regulations, inscribing his name and address in full, specifying in what capacity he attends, and, if a delegate, the title of the institution from which he has received his appointment.

III.—MEETINGS.

The regular meetings of the Association shall be held annually, and commence on the first Tuesday in May or first Tuesday in June. The place of meeting shall be determined, with the time of meeting for each next successive year, by vote of the Association.

IV.—OFFICERS.

The officers of the Association shall be a President, four Vice-Presidents, one Permanent and one Assistant Secretary, a Treasurer, and Librarian. They shall be nominated by a special committee of one member from each State represented at the meeting, and shall be elected by vote on a general ticket.

Each officer, except the Permanent Secretary, shall hold his

appointment for one year, and until another is elected to succeed him. The Permanent Secretary shall hold his appointment until removed by death, resignation, or a vote of two thirds of the members present at a regular annual meeting.

The President and Vice-Presidents shall assume the functions of their respective offices at the beginning of the annual meeting next succeeding their election; all other officers shall enter upon their duties immediately after their election.

The President shall preside at the meetings, preserve order and decorum in debate, give a casting vote when necessary, and perform all the other duties that custom and parliamentary usage may require.

The Vice-Presidents, when called upon, shall assist the President in the performance of his duties, and during the absence, or at the request of the President, one of them shall officiate in his place.

The Permanent Secretary shall record the minutes and authenticate the proceedings; give due notice of the time and place of each next ensuing annual meeting; notify all members of committees of their appointment, and of the duties assigned to them; hold correspondence with other permanently organized medical societies, both domestic and foreign; serve as a member of the Committee of Publication; see that the published *Transactions* are promptly distributed to all the members who have paid the annual assessment, and carefully preserve the archives and unpublished transactions of the Association.

The Assistant Secretary shall aid the Permanent Secretary in recording and authenticating the proceedings of the Association; serve as a member of the Committee of Arrangements, and perform all the duties of Permanent Secretary temporarily, whenever that office shall be vacant, either by death, resignation, or removal.

The Treasurer shall have the immediate charge and management of the funds and property of the Association. He shall be a member of the Committee of Publication, to which committee he shall give bonds for the safe keeping and proper use and disposal of his trust. And through the same committee he shall present his accounts, duly authenticated, at every regular meeting.

The Librarian shall receive and preserve all the property in books, pamphlets, journals, and manuscripts presented to or acquired by the Association, record their titles in a book prepared for the purpose, acknowledge the receipt of the same, and he shall be a member of the Committee of Publication.

V.—STANDING COMMITTEES.

The following standing committees, each composed of seven members, shall be organized at every annual meeting, for preparing, arranging, and expediting business for each next ensuing year, and for carrying into effect the orders of the Association not otherwise assigned, namely, a Committee of Arrangements and a Committee of Publication.

The Committee of Arrangements shall, if no sufficient reasons prevent, be mainly composed of seven members, of whom the Assistant Secretary shall be one, residing in the place at which the Association is to hold its next annual meeting; and shall be required to provide suitable accommodations for the meeting, to verify and report upon the credentials of membership, to receive and announce all essays and memoirs voluntarily communicated, either by members of the Association, or by others through them, and to determine the order in which such papers are to be read and considered.

The Committee of Publication, of which the Secretaries, Treasurer, and Librarian must constitute a part, shall have charge of preparing for the press, and of publishing and distributing such of the proceedings, transactions, and memoirs of the Association as may be ordered to be published. The six members of this Committee, who have not the immediate management of the funds, shall also, in their own names as agents for the Association, hold the bond of the Treasurer for the faithful execution of his office, and shall annually audit and authenticate his accounts, and present a statement of the same in the annual report of the Committee; which report shall specify the character and cost of the publications of the Association during the year, the number of copies still at the disposal of the meeting, the funds on hand for further operations, and the probable amount of the assessment to be laid on each member of the Association for covering its annual expenditures.

VI.—FUNDS AND APPROPRIATIONS.

Funds shall be raised by the Association for meeting its current expenses and awards from year to year, but never with the view of creating a permanent income from investments. Funds may be obtained by an equal assessment of not more than five dollars annually, on each of the delegates and permanent members; by voluntary contributions for specific objects; and by the sale and disposal of publications, or of works prepared for publication.

The funds may be appropriated for defraying the expenses of the annual meetings, including the necessary expenses of the Permanent Secretary in maintaining the necessary correspondence of the Association; for publishing the proceedings, memoirs, and transactions of the Association; for enabling the Standing Committees to fulfil their respective duties, conduct their correspondence, and procure the materials necessary for the completion of their stated annual reports; for the encouragement of scientific investigation by prizes and awards of merit; and for defraying the expenses incidental to specific investigations under the instruction of the Association, where such investigations have been accompanied with an order on the Treasurer to supply the funds necessary for carrying them into effect.

VII.—PROVISION FOR AMENDMENT.

No amendment or alteration shall be made in any of these articles, except at the annual meeting next subsequent to that at which such amendment or alteration may have been proposed; and then only by the voice of three-fourths of all the delegates in attendance.

Provided, however, that when an amendment is properly under consideration, and an amendment is offered thereto, germane to the subject, it shall be in order, and if adopted, shall have the same standing and force as if proposed at the preceding meeting of the Association.

And, in acknowledgment of having adopted the foregoing propositions, and of our willingness to abide by them, and use our endeavors to carry into effect the objects of this Association as above set forth, we have hereunto affixed our names.

NAMES OF MEMBERS.	RESIDENCE.	INSTITUTION REPRESENTED.

BY-LAWS.

I.—ORDER OF BUSINESS.

The order of business at the annual meetings of the American Medical Association shall at all times be subject to the vote of three-fourths of all the members in attendance; and, until permanently altered, except when for a time suspended, it shall be as follows, viz.:—

1st. The calling of the meeting to order by the President elected the preceding year, or, in his absence, by one of the Vice-Presidents.

2d. The report of the Committee of Arrangements on the credentials of members, after the latter have registered their names and addresses, and the titles of the institutions which they represent.

3d. The reception of members by invitation.

4th. The election of permanent members.

5th. The reading of notes from absentees.

6th. The hearing of the annual address of the President.

7th. The reception of the reports of all special committees and voluntary communications, and their reference to the appropriate Sections.

8th. The appointment of the committee of one from each State represented, to nominate officers of the Association, and to fill the standing committees.

9th. The reading and consideration of the reports of the Standing Committees of Publication, on Prize Essays, and of Chairmen of Sections.

10th. Resolutions introducing new business, and instructions to the permanent committees.

11th. The selection of the next place of meeting.

12th. The report of the Nominating Committee, and the election of officers of the Association.

13th. Reports from the several Sections.

14th. Reading of the minutes by the Secretary.

15th. Unfinished and miscellaneous business.

16th. Adjournment.

II.—SECTIONS.

The general meetings of the Association shall be restricted to the morning sessions; and the afternoon sessions, commencing at three o'clock, shall be devoted to the hearing of reports and papers and their consideration, in the following *Sections*:—

1. Practical Medicine, Materia Medica, and Physiology.
2. Obstetrics and Diseases of Women and Children.
3. Surgery and Anatomy.
4. Medical Jurisprudence, Chemistry, and Psychology.
5. State Medicine and Public Hygiene.

The chairman and secretary of the several Sections shall, like other officers of the Association, be nominated by the special committee of one member from each State represented at the meeting, and elected by a vote on a general ticket. They shall hold their office until the close of the proper business of the annual meeting next succeeding their election, and until their successors are appointed.

The Section on State Medicine and Public Hygiene shall be composed of one member from each State, representing, as far as practicable, the State Boards of Health. The officers of this Section to be also designated by the Committee on Nominations.

The chairmen of the several Sections shall prepare and read in the general sessions of the Association papers on the advances and discoveries of the past year in the branches of science included in their respective Sections; the reading of such papers not to occupy longer than forty minutes for each.

Papers appropriate to the several Sections, in order to secure consideration and action, must be sent to the Secretary of the appropriate Section at least one month before the meeting which is to act upon them. It shall be the duty of the Secretary to whom such papers are sent, to examine them with care, and, with the advice of the Chairman of his Section, to determine the time and order of their presentation, and give due notice of the same; and, after their full examination and discussion by the Section, they shall be sent to the Permanent Secretary of the Association.

No paper shall be read before either of the Sections, the reading of which occupies more than twenty minutes. Such papers shall be referred by the Section to sub-committees especially appointed for their examination. The sub-committees shall be allowed thirty days for such examination; at the end of which time they shall

forward the papers to the Committee of Publication, with such recommendation as they may deem proper. The author of such papers, however, may read abstracts before the Section within the allotted twenty minutes. No member shall address the Section more than once upon the same subject, nor speak longer than fifteen minutes without unanimous consent.

All papers presented directly to the Association, and other matters, may, at the discretion of the Association, be referred to the various sections for their consideration and report.

III.—STANDING COMMITTEES.

The following are the Standing Committees of the Association, to be filled by the Committee on Nominations, and to report at the next annual meeting subsequent to their appointment, viz.: Committee of Arrangements; Committee of Publication; Committee on Prize Essays; and Committee on American Medical Necrology.

The *Committee of Publication* shall append to each volume of the *Transactions* hereafter published, a copy of the Constitution, By-Laws, and Code of Ethics of the Association. It shall print conspicuously, at the beginning of each volume of the *Transactions*, the following disclaimer, viz.: The American Medical Association, although formally accepting and publishing the reports of the various standing committees, holds itself wholly irresponsible for the opinions, theories, or criticisms therein contained, except when otherwise decided by special resolution.

The *Committee on Prize Essays* shall consist of five members, residing in the same neighborhood, whose duty it shall be, in the interval between the present and the next succeeding annual sessions, to receive original papers upon any medical subject, from any persons who may choose to send them; to decide upon the merits of these papers, and to select for presentation to the Association, at its next session, such as they may deem worthy of being thus presented. The Committee shall have power to form such regulations as to the mode in which the papers are to be presented, and as to the observing of secrecy, as they may think proper; and also to award two prizes of one hundred dollars each, to the best two original communications reported on favorably by them, and directed by the Association to be published.

The *Committee on American Medical Necrology* shall consist of one member for each State and Territory represented in the Associa-

tion, whose duty it shall be to procure memorials of the eminent and worthy dead among the distinguished physicians of their respective States and Territories, and transmit them to the chairman of this committee on or before the first of April of each and every year.

IV.—THE PUBLICATION OF PAPERS AND REPORTS.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Committee of Publication on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Committee of Publication shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

V.—ASSESSMENTS.

The sum of five dollars shall be assessed, annually, upon each delegate to the sessions of the Association, as well as upon each of its permanent members, whether attending or not, for the purpose of raising a fund to defray necessary expenses. The payment of this sum shall be required of the delegates and members in attendance upon the sessions of the Association previously to their taking their seats and participating in the business of the sessions. Permanent members, not in attendance, shall transmit their dues to the Treasurer.

Any permanent member who shall fail to pay his annual dues for three successive years, unless absent from the country, shall be dropped from the roll of permanent members, after having been notified by the Secretary of the forfeiture of his membership.

VI.—DELEGATES FROM THE MEDICAL STAFFS OF THE ARMY AND NAVY.

Delegates representing the medical staffs of the United States Army and Navy, shall be appointed by the Chiefs of the Army and Navy Medical Bureaus. The number of delegates so appointed shall be four from the army medical officers, and an equal number from the navy medical officers.

VII.—DELEGATES TO FOREIGN MEDICAL SOCIETIES.

The President shall be authorized annually to appoint delegates to represent this Association at the meetings of the British Medical Association, the American Medical Society at Paris, and such other scientific bodies in Europe or other foreign countries as may be affiliated with us.

VIII.—DUTIES OF MEMBERS.

No one shall be permitted to address the Association, except he shall have first given his name and residence, which shall be distinctly announced from the chair, and the member may be required to go forward and speak from the stand, but not more than ten minutes at one time.

No one appointed on a special committee, who fails to report at the meeting next succeeding the one at which he is appointed, shall be continued on such committee, or appointed on any other, unless a satisfactory excuse is offered.

It shall be the duty of every member of this Association, who learns that any existing medical school departs from the published conditions of graduation, to report the fact at the annual meetings; and, on proof of the fact, such school shall be deprived of its representation in this body.

IX.—CONDITION EXCLUDING REPRESENTATION.

No State or Local Medical Society, or other organized institution, shall be entitled to representation in this Association that has not adopted its Code of Ethics; or that has intentionally violated or disregarded any article or clause of the same.

This Association recognizes as a "regular organized" medical college one that has been represented at any meeting, and that complies with the rules and directions found in the published *Transactions*, vol. xiii. page 33.

X.—OF THE PREVIOUS QUESTION.

When the previous question is demanded, it shall take at least twenty members to second it; and when the main question is put under force of the previous question and negatived, the question shall remain under consideration the same as if the previous question had not been enforced.

XI.—JUDICIAL COUNCIL.

A council, consisting of twenty-one members, shall be appointed by the Nominating Committee, whose duty it shall be to take cognizance of, and decide, all questions of an ethical or judicial character that may arise in connection with the Association. Of the twenty-one members of the council first appointed the seven first named on the list shall hold office one year, and the second seven named shall hold office two years.

With these exceptions the term of office of members of the council shall be three years, seven being appointed by the Nominating Committee annually.

The said council shall organize by choosing a President and Secretary, and shall keep a permanent record of its proceedings. The decisions of said council on all matters referred to it by the Association shall be final, and shall be reported to the Association at the earliest practical moment.

All questions of a personal character, including complaints and protests, and all questions on credentials, shall be referred at once, after the report of the Committee of Arrangements or other presentation, to the *Judicial Council*, and without discussion.

XII.—NEW BUSINESS.

No new business, resolutions by members, etc., shall be introduced at the general session of the Association except on the first and fourth days of meetings.

ORDINANCES.

Resolved, That the several Sections of this Association be requested, in the future, to refer no papers or reports to the Committee of Publication, except such as can be fairly classed under one of the three following heads, viz: 1st. Such as may contain and establish *positively* new facts, modes of practice, or principles of real value. 2d. Such as may contain the results of well-devised original experimental researches. 3d. Such as present so complete a review of the facts on any particular subject as to enable the writer to deduce therefrom legitimate conclusions of importance.

Resolved, That the several sections be requested, in the future, to refer all such papers as may be presented to them for examination by this Association, that contain matter of more or less value, and yet cannot be fairly ranked under either of the heads mentioned in the foregoing resolution, back to their authors with the recommendation that they be published in such regular medical periodicals as said authors may select, with the privilege of placing at the head of such papers, "Read to the Section of the American Medical Association on the day of 18 ." (Vide *Transactions*, vol. xvi. p. 40.)

Resolved, That the Association shall send annually a delegate to the "Association of Medical Superintendents of Insane Asylums," one of whose duties it shall be to urge upon that Association the advantage, for all purposes of science, of a more intimate union with this Association. (Vide *Transactions*, vol. xvi. p. 41.)

Resolved, That, instead of yearly reprinting the list of members of the American Medical Association, the Committee of Publication be instructed to prepare and print in the *Transactions* an alphabetical catalogue triennially, containing a complete list of the Permanent Members, with their names in full, designating their residences, the year of their admission, the offices they may have held in the Association, and, in case of death or rejection, the date thereof. (Vide *Transactions*, vol. xvii. p. 33.)

Resolved, That no report or other paper shall be presented to this Association unless it be so prepared that it can be put at once into the hands of the Permanent Secretary, to be transmitted to the Committee of Publication. (Vide *Transactions*, vol. xvii. p. 27.)

Resolved, That the Permanent Secretary hereafter and from this date be authorized to draw a warrant upon the Treasurer for the

expenses incurred in his attendance upon each session of the Association, and that the Treasurer is hereby instructed to pay the same. (Vide *Transactions*, vol. xviii. p. 42.)

Resolved, That the faculties of the several medical colleges of the United States be recommended to announce explicitly in their annual commencement circulars and advertisements that they will not receive certificates of time of study from irregular practitioners, and that they will not confer the degree upon any one who may acknowledge his intention to practise in accordance with any exclusive system. (Vide *Transactions*, vol. xix. p. 31.)

Resolved, That there be added to the Committee of Arrangements a Sub-committee of Arrangements in each of our large cities, consisting of three members, whose duty it shall be to obtain, if practicable, a reduction of fare upon the routes of travel for the delegates from their city and vicinity who attend the meeting of the Association.

On motion, the Permanent Secretary was empowered to make the appointments on said committees. (Vide *Transactions*, vol. xix. p. 39.)

Resolved, That a standing committee of one be appointed upon the whole subject of vaccination, to report from time to time on such topics connected with it as shall, in the estimation of said committee, appear of chief practical interest and importance to the profession. (Vide *Transactions*, vol. xix. p. 40.)

Resolved, That those gentlemen who desire to report on special subjects, and will pledge themselves to report at the next meeting, be requested to send their names, and the subjects on which they desire to report, to the Permanent Secretary. (Vide *Transactions*, vol. xix. p. 42.)

Resolved, That hereafter the necessary expenses for rent of hall for general meetings and rooms for sections to accommodate the annual meetings, and the necessary expenses for cards of membership, be paid out of the treasury of the Association. (Vide *Transactions*, vol. xix. p. 42.)

Resolved, That each State Medical Society be requested to prepare an annual register of all the regular practitioners of medicine in their respective States, giving the names of the colleges in which they may have graduated, and date of diploma or license. (Vide *Transactions*, vol. xx. p. 20.)

Resolved, That this Association recognizes specialties as proper and legitimate fields of practice.

Resolved, That specialists shall be governed by the same rules of professional etiquette as have been laid down for general practitioners.

Resolved, That it shall not be proper for specialists publicly to advertise themselves such, or to assume any title not specially granted by a regularly chartered college.

Resolved, That private handbills addressed to members of the medical profession, or by cards in medical journals, calling the attention of professional brethren to themselves as specialists, be declared in violation of the Code of Ethics of the American Medical Association. (Vide *Transactions*, vol. xx. p. 28.)

Resolved, That a Committee of one be appointed, residing at Washington, to render the Librarian of Congress such assistance as the interests of the Association may require. (Vide *Transactions*, vol. xx. p. 29.)

Whereas, The proper construction of Art. IV., Sec. 1, Code of Ethics, A. M. A., having been called for, relative to consultation with irregular practitioners who are graduates of regular schools:

Resolved, That said Art. IV., Sect. 1, Code of Ethics, excludes all such practitioners from recognition by the regular profession. (Vide *Transactions*, vol. xx. p. 30.)

Whereas, The contract system is contrary to medical ethics:

Resolved, That all contract physicians, as well as those guilty of bidding for practice at less rates than those established by a majority of regular graduates of the same locality, be classed as irregular practitioners. (Vide *Transactions*, vol. xx. p. 41.)

Resolved, That if any member fail to reply for more than one year to the circular sent to him by the Committee of Publication, he shall forfeit his right to the volume, and it shall revert to the Association, to be sold to any applicant at the current rates. (Vide *Transactions*, vol. xxi. p. 30.)

Resolved, That the Committee of Arrangements for the next ensuing meeting of this Association, and for all meetings thereafter, be directed to prepare a list of members present on a separate roll, for convenience and accuracy in calling the ayes and nays when the same shall be demanded. (Vide *Transactions*, vol. xxi. p. 60.)

CODE OF ETHICS

OF THE

AMERICAN MEDICAL ASSOCIATION,

ADOPTED MAY, 1847.

CODE OF MEDICAL ETHICS.

OF THE DUTIES OF PHYSICIANS TO THEIR PATIENTS, AND OF THE OBLIGATIONS OF PATIENTS TO THEIR PHYSICIANS.

ART. I.—*Duties of physicians to their patients.*

§ 1. A physician should not only be ever ready to obey the calls of the sick, but his mind ought also to be imbued with the greatness of his mission, and the responsibility he habitually incurs in its discharge. These obligations are the more deep and enduring, because there is no tribunal other than his own conscience to adjudge penalties for carelessness or neglect. Physicians should, therefore, minister to the sick with due impressions of the importance of their office; reflecting that the ease, the health, and the lives of those committed to their charge, depend on their skill, attention, and fidelity. They should study, also, in their deportment, so to unite *tenderness* with *firmness*, and *condescension* with *authority*, as to inspire the minds of their patients with gratitude, respect, and confidence.

§ 2. Every case committed to the charge of a physician should be treated with attention, steadiness, and humanity. Reasonable indulgence should be granted to the mental imbecility and caprices of the sick. Secrecy and delicacy, when required by peculiar circumstances, should be strictly observed; and the familiar and confidential intercourse to which physicians are admitted in their professional visits, should be used with discretion, and with the most scrupulous regard to fidelity and honor. The obligation of secrecy extends beyond the period of professional services;—none of the privacies of personal and domestic life, no infirmity of disposition or flaw of character observed during professional attendance should ever be divulged by the physician except when he is imperatively required to do so. The force and necessity of this obligation are indeed so great, that professional men have, under

certain circumstances, been protected in their observance of secrecy by courts of justice.

§ 3. Frequent visits to the sick are in general requisite, since they enable the physician to arrive at a more perfect knowledge of the disease—to meet promptly every change which may occur, and also tend to preserve the confidence of the patient. But unnecessary visits are to be avoided, as they give useless anxiety to the patient, tend to diminish the authority of the physician, and render him liable to be suspected of interested motives.

§ 4. A physician should not be forward to make gloomy prognostications, because they savor of empiricism, by magnifying the importance of his services in the treatment or cure of the disease. But he should not fail, on proper occasions, to give to the friends of the patient timely notice of danger when it really occurs; and even to the patient himself, if absolutely necessary. This office, however, is so peculiarly alarming when executed by him, that it ought to be declined whenever it can be assigned to any other person of sufficient judgment and delicacy. For the physician should be the minister of hope and comfort to the sick; that, by such cordials to the drooping spirit, he may smooth the bed of death, revive expiring life, and counteract the depressing influence of those maladies which often disturb the tranquillity of the most resigned in their last moments. The life of a sick person can be shortened not only by the acts, but also by the words or the manner of a physician. It is, therefore, a sacred duty to guard himself carefully in this respect, and to avoid all things which have a tendency to discourage the patient and to depress his spirits.

§ 5. A physician ought not to abandon a patient because the case is deemed incurable; for his attendance may continue to be highly useful to the patient, and comforting to the relatives around him, even in the last period of a fatal malady, by alleviating pain and other symptoms, and by soothing mental anguish. To decline attendance, under such circumstances, would be sacrificing to fanciful delicacy and mistaken liberality, that moral duty, which is independent of, and far superior to, all pecuniary consideration.

§ 6. Consultations should be promoted in difficult or protracted cases, as they give rise to confidence, energy, and more enlarged views in practice.

§ 7. The opportunity which a physician not unfrequently enjoys of promoting and strengthening the good resolutions of his patients, suffering under the consequences of vicious conduct, ought never

to be neglected. His counsels, or even remonstrances, will give satisfaction, not offence, if they be proffered with politeness, and evince a genuine love of virtue, accompanied by a sincere interest in the welfare of the person to whom they are addressed.

ART. II.—*Obligations of patients to their physicians.*

§ 1. The members of the medical profession, upon whom is enjoined the performance of so many important and arduous duties towards the community, and who are required to make so many sacrifices of comfort, ease, and health, for the welfare of those who avail themselves of their services, certainly have a right to expect and require, that their patients should entertain a just sense of the duties which they owe to their medical attendants.

§ 2. The first duty of a patient is to select as his medical adviser one who has received a regular professional education. In no trade or occupation do mankind rely on the skill of an untaught artist; and in medicine, confessedly the most difficult and intricate of the sciences, the world ought not to suppose that knowledge is intuitive.

§ 3. Patients should prefer a physician whose habits of life are regular, and who is not devoted to company, pleasure, or to any pursuit incompatible with his professional obligations. A patient should, also, confide the care of himself and family, as much as possible, to one physician; for a medical man who has become acquainted with the peculiarities of constitution, habits, and predispositions of those he attends, is more likely to be successful in his treatment than one who does not possess that knowledge.

A patient who has thus selected his physician should always apply for advice in what may appear to him trivial cases, for the most fatal results often supervene on the slightest accidents. It is of still more importance that he should apply for assistance in the forming stage of violent diseases; it is to a neglect of this precept that medicine owes much of the uncertainty and imperfection with which it has been reproached.

§ 4. Patients should faithfully and unreservedly communicate to their physician the supposed cause of their disease. This is the more important, as many diseases of a mental origin simulate those depending on external causes, and yet are only to be cured by ministering to the mind diseased. A patient should never be afraid of thus making his physician his friend and adviser; he

should always bear in mind that a medical man is under the strongest obligations of secrecy. Even the female sex should never allow feelings of shame or delicacy to prevent their disclosing the seat, symptoms, and causes of complaints peculiar to them. However commendable a modest reserve may be in the common occurrences of life, its strict observance in medicine is often attended with the most serious consequences, and a patient may sink under a painful and loathsome disease, which might have been readily prevented had timely intimation been given to the physician.

§ 5. A patient should never weary his physician with a tedious detail of events or matters not appertaining to his disease. Even as relates to his actual symptoms, he will convey much more real information by giving clear answers to interrogatories, than by the most minute account of his own framing. Neither should he obtrude upon his physician the details of his business nor the history of his family concerns.

§ 6. The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions as to their fitness to influence his attention to them. A failure in one particular may render an otherwise judicious treatment dangerous, and even fatal. This remark is equally applicable to diet, drink, and exercise. As patients become convalescent, they are very apt to suppose that the rules prescribed for them may be disregarded, and the consequence, but too often, is a relapse. Patients should never allow themselves to be persuaded to take any medicine whatever, that may be recommended to them by the self-constituted doctors and doctresses who are so frequently met with, and who pretend to possess infallible remedies for the cure of every disease. However simple some of their prescriptions may appear to be, it often happens that they are productive of much mischief, and in all cases they are injurious, by contravening the plan of treatment adopted by the physician.

§ 7. A patient should, if possible, avoid even the *friendly visits of a physician* who is not attending him—and when he does receive them, he should never converse on the subject of his disease, as an observation may be made, without any intention of interference, which may destroy his confidence in the course he is pursuing, and induce him to neglect the directions prescribed to him. A patient should never send for a consulting physician without the express consent of his own medical attendant. It is of great importance that physicians should act in concert; for, although their modes

of treatment may be attended with equal success when employed singly, yet conjointly they are very likely to be productive of disastrous results.

§ 8. When a patient wishes to dismiss his physician, justice and common courtesy require that he should declare his reasons for so doing.

§ 9. Patients should always, when practicable, send for their physician in the morning, before his usual hour of going out; for, by being early aware of the visits he has to pay during the day, the physician is able to apportion his time in such a manner as to prevent an interference of engagements. Patients should also avoid calling on their medical adviser unnecessarily during the hours devoted to meals or sleep. They should always be in readiness to receive the visits of their physician, as the detention of a few minutes is often of serious inconvenience to him.

§ 10. A patient should, after his recovery, entertain a just and enduring sense of the value of the services rendered him by his physician; for these are of such a character, that no mere pecuniary acknowledgment can repay or cancel them.

OF THE DUTIES OF PHYSICIANS TO EACH OTHER, AND TO THE PROFESSION AT LARGE.

ART. I.—*Duties for the support of professional character.*

§ 1. Every individual, on entering the profession, as he becomes thereby entitled to all its privileges and immunities, incurs an obligation to exert his best abilities to maintain its dignity and honor, to exalt its standing, and to extend the bounds of its usefulness. He should, therefore, observe strictly such laws as are instituted for the government of its members;—should avoid all contumelious and sarcastic remarks relative to the faculty as a body; and while, by unwearied diligence, he resorts to every honorable means of enriching the science, he should entertain a due respect for his seniors, who have, by their labors, brought it to the elevated condition in which he finds it.

§ 2. There is no profession, from the members of which greater purity of character, and a higher standard of moral excellence are required, than the medical; and to attain such eminence is a duty every physician owes alike to his profession and to his patients. It is due to the latter, as without it he cannot command their respect and confidence, and to both, because no scientific attainments can

compensate for the want of correct moral principles. It is also incumbent upon the faculty to be temperate in all things, for the practice of physic requires the unremitting exercise of a clear and vigorous understanding; and, on emergencies, for which no professional man should be unprepared, a steady hand, an acute eye, and an unclouded head mav be essential to the well-being, and even to the life, of a fellow-creature.

§ 3. It is derogatory to the dignity of the profession to resort to public advertisements, or private cards, or handbills, inviting the attention of individuals affected with particular diseases—publicly offering advice and medicine to the poor gratis, or promising radical cures; or to publish cases and operations in the daily prints, or suffer such publications to be made; to invite laymen to be present at operations, to boast of cures and remedies, to adduce certificates of skill and success, or to perform any other similar acts. These are the ordinary practices of empirics, and are highly reprehensible in a regular physician.

§ 4. Equally derogatory to professional character is it for a physician to hold a patent for any surgical instrument or medicine; or to dispense a secret *nostrum*, whether it be the composition or exclusive property of himself or of others. For, if such nostrum be of real efficacy, any concealment regarding it is inconsistent with beneficence and professional liberality; and if mystery alone give it value and importance, such craft implies either disgraceful ignorance or fraudulent avarice. It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them.

ART. II.—*Professional services of physicians to each other.*

§ 1. All practitioners of medicine, their wives, and their children while under the paternal care, are entitled to the gratuitous services of any one or more of the faculty residing near them, whose assistance may be desired. A physician afflicted with disease is usually an incompetent judge of his own case; and the natural anxiety and solicitude which he experiences at the sickness of a wife, a child, or any one who, by the ties of consanguinity, is rendered peculiarly dear to him, tend to obscure his judgment, and produce timidity and irresolution in his practice. Under such circumstances, medical men are peculiarly dependent upon each other, and kind offices and professional aid should always be cheerfully

and gratuitously afforded. Visits ought not, however, to be obtruded officiously; as such unasked civility may give rise to embarrassment, or interfere with that choice on which confidence depends. But, if a distant member of the faculty, whose circumstances are affluent, request attendance, and an honorarium be offered, it should not be declined; for no pecuniary obligation ought to be imposed, which the party receiving it would wish not to incur.

ART. III.—*Of the duties of physicians as respects vicarious offices.*

§ 1. The affairs of life, the pursuit of health, and the various accidents and contingencies to which a medical man is peculiarly exposed, sometimes require him temporarily to withdraw from his duties to his patients, and to request some of his professional brethren to officiate for him. Compliance with this request is an act of courtesy, which should always be performed with the utmost consideration for the interest and character of the family physician, and when exercised for a short period, all the pecuniary obligations for such service should be awarded to him. But if a member of the profession neglect his business in quest of pleasure and amusement, he cannot be considered as entitled to the advantages of the frequent and long-continued exercise of this fraternal courtesy, without awarding to the physician who officiates, the fees arising from the discharge of his professional duties.

In obstetrical and important surgical cases, which give rise to unusual fatigue, anxiety, and responsibility, it is just that the fees accruing therefrom should be awarded to the physician who officiates.

ART. IV.—*Of the duties of physicians in regard to consultations.*

§ 1. A regular medical education furnishes the only presumptive evidence of professional abilities and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of his profession. Nevertheless, as in consultations the good of the patient is the sole object in view, and this is often dependent on personal confidence, no intelligent regular practitioner, who has a license to practise from some medical board of known and acknowledged respectability, recognized by this Association, and who is in good moral and professional standing in the place in which he resides, should be fastidiously excluded from fellow-

ship, or his aid refused in consultation, when it is requested by the patient. But no one can be considered as a regular practitioner or a fit associate in consultation, whose practice is based on an exclusive dogma, to the rejection of the accumulated experience of the profession, and of the aids actually furnished by anatomy, physiology, pathology, and organic chemistry.

§ 2. In consultations, no rivalship or jealousy should be indulged; candor, probity, and all due respect should be exercised towards the physician having charge of the case.

§ 3. In consultations, the attending physician should be the first to propose the necessary questions to the sick; after which the consulting physician should have the opportunity to make such further inquiries of the patient as may be necessary to satisfy him of the true character of the case. Both physicians should then retire to a private place for deliberation; and the one first in attendance should communicate the directions agreed upon to the patient or his friends, as well as any opinions which it may be thought proper to express. But no statement or discussion of it should take place before the patient or his friends, except in the presence of all the faculty attending, and by their common consent; and no *opinions* or *prognostications* should be delivered which are not the result of previous deliberation and concurrence.

§ 4. In consultations, the physician in attendance should deliver his opinion first; and when there are several consulting, they should deliver their opinions in the order in which they have been called in. No decision, however, should restrain the attending physician from making such variations in the mode of treatment as any subsequent unexpected change in the character of the case may demand. But such variation, and the reasons for it, ought to be carefully detailed at the next meeting in consultation. The same privilege belongs also to the consulting physician if he is sent for in an emergency, when the regular attendant is out of the way, and similar explanations must be made by him at the next consultation.

§ 5. The utmost punctuality should be observed in the visits of physicians when they are to hold consultation together, and this is generally practicable, for society has been considerate enough to allow the plea of a professional engagement to take precedence of all others, and to be an ample reason for the relinquishment of any present occupation. But as professional engagements may sometimes interfere, and delay one of the parties, the physician who first arrives should wait for his associate a reasonable period, after

which the consultation should be considered as postponed to a new appointment. If it be the attending physician who is present, he will of course see the patient and prescribe; but if it be the consulting one, he should retire, except in case of emergency, or when he has been called from a considerable distance, in which latter case he may examine the patient, and give his opinion in *writing*, and *under seal*, to be delivered to his associate.

§ 6. In consultations, theoretical discussions should be avoided, as occasioning perplexity and loss of time. For there may be much diversity of opinion concerning speculative points, with perfect agreement in those modes of practice which are founded, not on hypothesis, but on experience and observation.

§ 7. All discussions in consultation should be held as secret and confidential. Neither by words nor manner should any of the parties to a consultation assert or insinuate that any part of the treatment pursued did not receive his assent. The responsibility must be equally divided between the medical attendants—they must equally share the credit of success as well as the blame of failure.

§ 8. Should an irreconcilable diversity of opinion occur when several physicians are called upon to consult together, the opinion of the majority should be considered as decisive; but if the numbers be equal on each side, then the decision should rest with the attending physician. It may, moreover, sometimes happen that two physicians cannot agree in their views of the nature of a case, and the treatment to be pursued. This is a circumstance much to be deplored, and should always be avoided, if possible, by mutual concessions, as far as they can be justified by a conscientious regard for the dictates of judgment. But in the event of its occurrence, a third physician should, if practicable, be called to act as umpire; and, if circumstances prevent the adoption of this course, it must be left to the patient to select the physician in whom he is most willing to confide. But, as every physician relies upon the rectitude of his judgment, he should, when left in the minority, politely and consistently retire from any further deliberation in the consultation, or participation in the management of the case.

§ 9. As circumstances sometimes occur to render a *special consultation* desirable, when the continued attendance of two physicians might be objectionable to the patient, the member of the faculty whose assistance is required in such cases should sedulously guard against all future unsolicited attendance. As such consultations

require an extraordinary portion both of time and attention, at least a double honorarium may be reasonably expected.

§ 10. A physician who is called upon to consult, should observe the most honorable and scrupulous regard for the character and standing of the practitioner in attendance; the practice of the latter, if necessary, should be justified as far as it can be, consistently with a conscientious regard for truth, and no hint or insinuation should be thrown out which could impair the confidence reposed in him, or affect his reputation. The consulting physician should also carefully refrain from any of those extraordinary attentions or assiduities which are too often practised by the dishonest for the base purpose of gaining applause, or ingratiating themselves into the favor of families and individuals.

ART. V.—*Duties of physicians in cases of interference.*

§ 1. Medicine is a liberal profession, and those admitted into its ranks should found their expectations of practice upon the extent of their qualifications, not on intrigue or artifice.

§ 2. A physician, in his intercourse with a patient under the care of another practitioner, should observe the strictest caution and reserve. No meddling inquiries should be made—no disingenuous hints given relative to the nature and treatment of his disorder; nor any course of conduct pursued that may directly or indirectly tend to diminish the trust reposed in the physician employed.

§ 3. The same circumspection and reserve should be observed when, from motives of business or friendship, a physician is prompted to visit an individual who is under the direction of another practitioner. Indeed, such visits should be avoided, except under peculiar circumstances; and when they are made, no particular inquiries should be instituted relative to the nature of the disease, or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

§ 4. A physician ought not to take charge of or prescribe for a patient who has recently been under the care of another member of the faculty in the same illness, except in cases of sudden emergency, or in consultation with the physician previously in attendance, or when the latter has relinquished the case, or been regularly notified that his services are no longer desired. Under such circumstances no unjust and illiberal insinuations should be thrown out in relation to the conduct or practice previously pursued, which should

be justified as far as candor and regard for truth and probity will permit; for it often happens that patients become dissatisfied when they do not experience immediate relief, and, as many diseases are naturally protracted, the want of success, in the first stage of treatment, affords no evidence of a lack of professional knowledge and skill.

§ 5. When a physician is called to an urgent case, because the family attendant is not at hand, he ought, unless his assistance in consultation be desired, to resign the care of the patient to the latter immediately on his arrival.

§ 6. It often happens in cases of sudden illness, or of recent accidents and injuries, owing to the alarm and anxiety of friends, that a number of physicians are simultaneously sent for. Under these circumstances, courtesy should assign the patient to the first who arrives, who should select from those present any additional assistance that he may deem necessary. In all such cases, however, the practitioner who officiates should request the family physician, if there be one, to be called, and, unless his further attendance be requested, should resign the case to the latter on his arrival.

§ 7. When a physician is called to the patient of another practitioner, in consequence of the sickness or absence of the latter, he ought, on the return or recovery of the regular attendant and with the consent of the patient, to surrender the case.

[The expression, "patient of another practitioner," is understood to mean a patient who may have been under the charge of another practitioner at the time of the attack of sickness, or departure from home of the latter, or who may have called for his attendance during his absence or sickness, or in any other manner given it to be understood that he regarded the said physician as his regular medical attendant.]

§ 8. A physician, when visiting a sick person in the country may be desired to see a neighboring patient who is under the regular direction of another physician, in consequence of some sudden change or aggravation of symptoms. The conduct to be pursued on such an occasion is to give advice adapted to present circumstances; to interfere no further than is absolutely necessary with the general plan of treatment; to assume no future direction unless it be expressly desired; and, in this last case, to request an immediate consultation with the practitioner previously employed.

§ 9. A wealthy physician should not give advice *gratis* to the affluent; because his doing so is an injury to his professional bre-

thren. The office of a physician can never be supported as an exclusively beneficent one; and it is defrauding, in some degree, the common funds for its support, when fees are dispensed with which might justly be claimed.

§ 10. When a physician who has been engaged to attend a case of midwifery is absent, and another is sent for, if delivery is accomplished during the attendance of the latter, he is entitled to the fee, but should resign the patient to the practitioner first engaged.

ART. VI.—*Of differences between physicians.*

§ 1. Diversity of opinion and opposition of interest may, in the medical as in other professions, sometimes occasion controversy and even contention. Whenever such cases unfortunately occur, and cannot be immediately terminated, they should be referred to the arbitration of a sufficient number of physicians or a *court-medical.*

§ 2. As peculiar reserve must be maintained by physicians towards the public, in regard to professional matters, and as there exist numerous points in medical ethics and etiquette through which the feelings of medical men may be painfully assailed in their intercourse with each other, and which cannot be understood or appreciated by general society, neither the subject-matter of such differences nor the adjudication of the arbitrators should be made public, as publicity in a case of this nature may be personally injurious to the individuals concerned, and can hardly fail to bring discredit on the faculty.

ART. VII.—*Of pecuniary acknowledgments.*

Some general rules should be adopted by the faculty, in every town or district, relative to *pecuniary acknowledgments* from their patients; and it should be deemed a point of honor to adhere to these rules with as much uniformity as varying circumstances will admit.

OF THE DUTIES OF THE PROFESSION TO THE PUBLIC, AND OF THE OBLIGATIONS OF THE PUBLIC TO THE PROFESSION.

ART. I.—*Duties of the profession to the public.*

§ 1. As good citizens, it is the duty of physicians to be ever vigilant for the welfare of the community, and to bear their part in sustaining its institutions and burdens; they should also be ever

ready to give counsel to the public in relation to matters especially appertaining to their profession, as on subjects of medical police, public hygiene, and legal medicine. It is their province to enlighten the public in regard to quarantine regulations—the location, arrangement, and dietaries of hospitals, asylums, schools, prisons, and similar institutions—in relation to the medical police of towns, as drainage, ventilation, etc.—and in regard to measures for the prevention of epidemic and contagious diseases; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering, even at the jeopardy of their own lives.

§ 2. Medical men should also be always ready, when called on by the legally constituted authorities, to enlighten coroners' inquests and courts of justice, on subjects strictly medical—such as involve questions relating to sanity, legitimacy, murder by poisons or other violent means, and in regard to the various other subjects embraced in the science of Medical Jurisprudence. But in these cases, and especially where they are required to make a *post-mortem* examination, it is just, in consequence of the time, labor, and skill required, and the responsibility and risk they incur, that the public should award them a proper honorarium.

§ 3. There is no profession by the members of which eleemosynary services are more liberally dispensed than the medical, but justice requires that some limits should be placed to the performance of such good offices. Poverty, professional brotherhood, and certain of the public duties referred to in the first section of this article, should always be recognized as presenting valid claims for gratuitous services; but neither institutions endowed by the public or by rich individuals, societies for mutual benefit, for the insurance of lives or for analogous purposes, nor any profession or occupation, can be admitted to possess such privilege. Nor can it be justly expected of physicians to furnish certificates of inability to serve on juries, to perform militia duty, or to testify to the state of health of persons wishing to insure their lives, obtain pensions, or the like, without a pecuniary acknowledgment. But to individuals in indigent circumstances, such professional services should always be cheerfully and freely accorded.

§ 4. It is the duty of physicians, who are frequent witnesses of the enormities committed by quackery, and the injury to health and even destruction of life caused by the use of quack medicines, to enlighten the public on these subjects, to expose the injuries

sustained by the unwary from the devices and pretensions of artful empirics and impostors. Physicians ought to use all the influence which they may possess, as professors in Colleges of Pharmacy and by exercising their option in regard to the shops to which their prescriptions shall be sent, to discourage druggists and apothecaries from vending quack or secret medicines, or from being in any way engaged in their manufacture and sale.

ART. II.—*Obligations of the public to physicians.*

§ 1. The benefits accruing to the public, directly and indirectly, from the active and unwearied beneficence of the profession, are so numerous and important, that physicians are justly entitled to the utmost consideration and respect from the community. The public ought likewise to entertain a just appreciation of medical qualifications; to make a proper discrimination between true science and the assumptions of ignorance and empiricism—to afford every encouragement and facility for the acquisition of medical education —and no longer to allow the statute-books to exhibit the anomaly of exacting knowledge from physicians, under a liability to heavy penalties, and of making them obnoxious to punishment for resorting to the only means of obtaining it.

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1865.

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The Constitution having been amended, the same officers presided also at Boston. (Vide *Transactions*, vol. xv. p. 50.)

1866.

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1868.

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1869.

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1873.

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